APPENDIX FS-G

DTSC Correspondence Related to FS/RAP

DTSC Comment Letter regarding
Draft Feasibility Study/Remedial Action Plan
for the North Shore at Mandalay Bay Project
Located in Oxnard, California.
September 30, 2005.

Response to DTSC Comments
on the Feasibility Study/Remedial Action Plan.
October 21, 2005.

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

1011 North Grandview Avenue
Glendale, California 91201

Arnold Schwarzenegger
Governor

September 30, 2005

Mr. Bill Teller
Director of Development
Trimark Pacific – Mandalay Bay, LLC
31111 Agoura Road, Suite 210
Westlake Village, California 91361

DRAFT FEASABILITY STUDY/REMEDIAL ACTION PLAN FOR THE NORTH SHORE AT MANDALAY BAY PROJECT LOCATED IN OXNARD, CALIFORNIA

Dear Mr. Teller:

The Department of Toxic Substances Control (DTSC) reviewed the subject Draft Feasibility Study/Remedial Action Plan (FS/RAP) Report proposed for the North Shore at Mandalay Bay project.

Enclosed, please find DTSC's comments which must be addressed in a revised FSRAP Report. Please submit five (5) copies of the response to comments in a tabular form and the final revisions to DTSC for review and approval by October 19, 2005.

If you have any questions, please contact Mr. Joe Sevrean, Project Manager, at (818) 551-2820 or me, at (818) 551-2831.

Sincerely,

Rita Kamat
Unit Chief
Southern California Cleanup Operations Branch – Glendale Office

Enclosures

cc: Mr. Charles E. Robinson, PE
LFR Levine-Fricke
3150 Bristol Street, Suite 250
Costa Mesa, California 92626

COMMENTS ON
THE DRAFT FEASIBILITY STUDY/REMEDIAL ACTION PLAN REPORT
NORTH SHORE AT MANDALAY BAY
OXNARD, CALIFORNIA

General Comment:

Include a table to cross-reference each comment with a response in the revised document.

RAP Addenda should be submitted and approved prior to implementation of the following items:

- Groundwater dewatering
- Ex Situ SVE soil treatment
- Biotreatment
- In Situ SVE/Aeration treatment
- Groundwater Extraction treatment with Air Stripping and Vapor-Phase Adsorption
- Onsite and offsite contaminated soil transportation plan
- Contractor Decontamination Plan
- Confirmation sample location figures

Specific Comments:

Quotes from the Report are in *underlined Italics*, immediately followed by DTSC comments.

1. Section 1.2, Site Description, Page 3:

The subject property is located approximately 1700 feet from the Pacific Ocean, and is bordered on the north and east by a canal (referred herein as the Mandalay Canal and in some historical reports as the Edison Canal) that flows to the ocean.

- The canal does not completely border the site boundaries to the north. Indicate what occupies the rest of the site's adjacent northern boundary.

- Indicate the source of the water in the Mandalay Canal that flows to the ocean.

The Milk-Vetch occupies approximately 3,200 square feet of the approximate 90-acre Site.

Indicate the dimensions of the area preserved for the Milk-Vetch.

The Site is relatively flat, with an elevation ranging from 10 to 40 feet above mean sea level.

Indicate the elevation of the canal on the northern and eastern borders the Site.

2. Section 1.5.3, Regulatory Consideration of Development and Remedial Plans, Pages 7 and 8:

The basic elements of the Memorandum of Understanding (MOU) between project applicant and California Department of Fish and Game (CDFG) were included as mitigation measures for the project within the Certified EIR. As part of the MOU, a portion of the Site will be protected from any activity to protect the Ventura Marsh Milk-Vetch in a preservation area, which is within a larger Resource Protection Area (RPA) that will restore lost habitat, and will also provide additional protection and buffer to the Milk-Vetch Preservation Area (MVPA).

Indicate whether any monitoring of the MVPA is being conducted and submit the contact information.

The City of Oxnard subsequently accepted all of the suggested modifications imposed by the California Coastal Commission, and now has a fully certified site-specific Local Coastal Program Amendment (LCPA) to govern the development of the North Shore project. Page 5152 of the LCPA discusses the different roles of the involved parties, and constraints of site use.

Provide a copy of page 5152 of the LCPA.

3. Section 1.6.1.2, Analytical Results, Page 11:

Barium was detected at concentrations exceeding its TTLC in five soil samples collected at depths ranging from 2 to 8 bgs.

Indicate the highest concentration of Barium detected during this investigation.

4. Section 1.6.4.2, Analytical Results, Pages 16 and 17:

Acetone and/or methylene chloride was detected in five of the seven soil samples at concentrations ranging from 11 mg/kg to 160 mg/kg. These analytes are common laboratory contaminants.

Usually laboratory contaminants are detected around the detection limit and not at gross lab contamination at levels of 11 mg/kg to 160 mg/kg which are unacceptable and usually do not pass the QA/QC criteria. Indicate whether these compounds were detected in the soil gas samples for VOC analysis.

5. Section 1.6.6.2, Analytical Results, Page 20:

Metals: Arsenic (25 samples), barium (5 samples), chromium (47 samples), lead (45 samples), nickel (47 samples), selenium (45 samples), zinc (33 samples), and mercury (15 samples) were detected at concentrations above 10 times their respective STLCs.

Based on STLC criteria, there are quite a few samples with metal concentrations with the potential to leach. Since the soil will remain onsite, submit a table showing the sample location, depth, concentration, and the impacted media (ie., cap, sludge).

Hydrocarbons:TPH was detected in 33 of the 45 samples analyzed.

Indicate the highest concentrations for the various ranges of TPH and indicate the sample location, depth, and impacted media.

PCBs: PCBs were detected at concentrations ranging from 0.054 mg/kg to 270 mg/kg in 55 soil samples collected at depths ranging from 2 to 9 feet bgs.

Indicate the sample location, depth, and impacted media for the PCB concentration of 270 mg/kg.

6. Section 1.6.7.2, Sampling, Soil Sampling, Page 25:

These physical parameters will be incorporated in the fate and transport models.

Indicate when the fate and transport models will be submitted for evaluation.

7. Section 1.6.7.2, Sampling, Soil Analytical Results, Pages 25, 26, and 27:

Metals: Barium (21 samples), chromium (20) samples, and lead (1 sample) were detected at concentrations above 10 times their respective STLCs in samples collected from fill and sludge materials.

Since the soil will remain onsite, submit a table showing the sample location, depth, concentration, and the impacted media (ie., cap, sludge).

PCBs: PCBs were detected at concentrations ranging from 0.17 mg/kg to 48 mg/kg.

Indicate the sample location, depth, and impacted media for the PCB concentration of 48 mg/kg.

Dioxins: Total 2,3,7,8-TCDD Equivalence (TEQ) was detected in the three samples analyzed at concentrations ranging from 72 ng/kg to 4,300 ng/kg.

Indicate the sample location, depth, and impacted media for the dioxin concentration of 4,300 ng/kg.

SVOCs and PAHs:

Indicate the sample location, depth, and impacted media for the highest concentration of each SVOC or PAH detected.

VOCs:

Indicate the sample location, depth, and impacted media for the highest concentration of each VOC detected.

TPH-cc and TRPH: Detectable TPH concentrations ranged from 65 mg/kg to 5,400 mg/kg. Detectable TRPH concentrations ranged from 19,400 mg/kg to 51,600 mg/kg.

Indicate the sample location, depth, and impacted media for the TPH concentration of 5,400 mg/kg and TRPH of 51,600 mg/kg.

8. Section 1.6.7.2, Geotechnical Evaluation Results, Page 29:

Figure FS-1 provides the depth of the recommended over-excavation.

It is hard to determine the over excavation depths in the Figure. Indicate the different depths with different colored contours. The RPA area does not appear to be excavated in this Figure. Indicate in this Figure or another Figure to show the over excavation contours of the RPA area.

9. Section 1.6.7.2, Methane, Pages 32 and 33:

Detected methane concentrations ranged from 970 ppmv to 62,000 ppmv.

Indicate the sample location and depth for the methane concentration of 62,000 ppmv.

As part of the comments received from the DTSC, further characterization of the Site is required. Below is a brief outline of this effort, with specific details to be provided in a work plan to the DTSC for approval:

Add another bullet item to evaluate the solubility of the Site's chemicals of concern.

10. Section 1.7.4, Site Hydrology, Page 35:

Figures FS-2a through FS-2f depict the geotechnical investigation's CPT data, which distinguished grain size and saturation.

The area of the road has a question mark (?) located at the first 10 feet bgs. Indicate whether any samples were collected and logged to determine whether the sludge material is located in this area.

11. Section 1.8, nature and Extent of Affected Media, Page 37:

The following subsections discuss the totality of data collected to date throughout the Site.

For each subsection discussed, indicate the highest concentration of each COC and the associated sample location, depth for each media (ie., fill/cap, sludge, tank farm and other areas, and native).

12. Section 1.8.1.2, Metals, Page 39:

Barium, chromium, and lead were the only metals detected at concentrations above 10 times their respective STLCs.

Section 1.6.6.2 also indicates various other metals detected 10 times above their respective STLCs. Clarify these differences and revise the text as necessary.

13. Section 1.8.1.6, Polychlorinated Biphenyls, Page 43:

For screening purposes, six soil samples were analyzed for soluble PCB concentrations using the California WET test.

Wherever the California WET test is mentioned, it should be identified as a modified method. Revise the text as necessary.

14. Section 1.11.1, Carcinogenic Risks, Page 53:

In Section 1.11 on page 52, chlordane is listed as a COPC. However, OCPs or chlordane is not mentioned in any of the selected media to reduce the risk to acceptable levels. Indicate the rationale for not listing chlordane or OCPs or revise the text.

15. Section 1.13.1, Soil and Sludge Media, Northeast Landfarm Fill/Cap Soils, Page 62:

The fill/cap soils in the Northeast Landfarm can be characterized by a layer that is estimated to be approximately 1 to 3 feet thick and, as the name implies, can be found as the uppermost layer of soils in this area. Based on aerial photographs, this material was imported to the Site after waste disposal activities had been stopped for the purpose of closing the Site through capping.

Indicate the source of the fill/cap material. If it is undocumented then it should be interpreted as site material used to cover the sludge material and not imported.

16. Section 1.13.1, Southwest Landfarm Native Soils, Page 69:

The total carcinogenic risk (6.0 X 10-5) for this area is solely attributable to the VOC contamination risk for indoor air quality. Due to the anticipated excavation and manipulation of soils in this area to prescribed depths for geotechnical purposes, the limited VOC concentrations in the native soils of this area are not expected to have a significant risk associated with them.

There is a significant risk of 6.0 X 10-5 for this area. Indicate if excavation and manipulation are the only remedial efforts to be implemented to reduce the risk for this subject media.

17. Section 2.2.2, Remedial Design, Pages 75 and 76:

Toxic Substances Control Act (TSCA): A separate U.S. EPA submittal has been submitted, which will be in accordance with this RAP.

Provide a copy of the U.S. EPA submittal.

18. Section 2.2.3, Construction Implementation, Page 77:

An approved biologist must observe the construction to ensure protective procedures are implemented.

Indicate who will approve the biologist and submit the contact information of the approved biologist prior to remediation activities.

19. Section 2.3, Remedial Action Objectives, Northeast and Southwest Landfarm Sludge Materials, Pages 80 and 81:

Consider the potential for SVOCs being present due to analytical limitations.

Indicate the RAO for potential present SVOCs.

20. Section 4.2.2.1, Soil-Vapor Extraction, Page 94:

Pilot testing of SVE at the North Shore Site would be necessary to provide design criteria, and to increase confidence in proper implementation.

In a RAP Addendum, submit the details of the pilot testing and indicate when the SVE system will be designed and placed.

21. Section 4.3.1, Engineering Controls – Containment Technologies, Page 100:

The dewatering for geotechnical and grading purposes forces groundwater to be treated prior to discharge to the Mandalay Canal.
In the site area, given the proximity of the canal, and the saline nature of the groundwater and surface water, NPDES and WDR permits would be issued by the RWQCB.

Provide copies of the acquired permits prior to remediation activities.

Hydraulic pilot testing would be necessary at the North Shore Site, but otherwise has been shown to be a feasible technology.

Submit the details of the hydraulic pilot testing for evaluation.

22. Section 5.1.3, Alternative 3-GWET with Air Stripping and Vapor-Phase Adsorption; Monitored Natural Attenuation; Hazardous Soil Excavation and Disposal; Affected Soil Excavation, Biotreatment, Consolidation and Stratification, In-Situ SVE/Aeration Treatment and Capping; Fencing with Deed Restrictions, Page 111:

Soils placed within 5 feet of groundwater would contain the lowest concentrations of chemicals of concern, and would be used as fill/cap material (no sludge material would be placed within the 5-foot zone).

Indicate the approximate thickness of the fill/cap material in the RPA to determine the distance the sludge material will be from the groundwater.

23. Section 5.3.3, Alternative 3, Page 118:

For the purpose of cost comparison, it is assumed that GWET would be performed for 1 year, and semiannual monitoring of selected wells at the site would continue for 5 years.

The post-remediation groundwater monitoring may be different than what is assumed for cost comparison.

24. Section 6.5.1, RAO Attainment, Pages 127 and 128:

Alternative 3 will consolidate treated affected soils within the Resource Protection Area (RPA) in two "Soil Containment Areas" (SCAs), which will have 3- to 6-foot thick soil caps that will effectively prevent erosion of affected soils and sludge.

- Indicate the two SCAs on a Figure.
- Sections b and e: 3-to 6-foot caps is not consistent with Section 5.3.1 that states protection of burrowing animals (none are projected to burrow deeper than 6 feet). Clarify the text.
- Discussion of the RAO attainment for methane gas issues at the site should be addressed. Add to text.

25. Section 6.5.1, Northeast Landfarm Sludge Materials, Page 129:

I. Prevent the inhalation of VOCs posing excess cancer risk levels of 1 X 10-6, or a non-carcinogenic target HI of 1.0.

The RAO for VOCs posing excess risk levels of 1 X 10-6 for inhalation should be re-evaluated based on the area of its final placement. Revise text if necessary.

m. VOC-affected soils will be excavated and consolidated within the SCAs near the surface, as cap material.

Site Sludge material has other compounds that will be present after SVE treatment and should not be used as cap material. Revise text.

26. Section 6.5.1, Southwest Landfarm Fill/Cap Soils, Southwest Landfarm Sludge Materials, Page 131:

v. Prevent the inhalation and threat to indoor air of benzene posing excess cancer risk levels exceeding the 1.0 X 10-6 cancer risk.

z. Prevent the inhalation and threat to indoor air quality posed by VOCs having an excess carcinogenic risk of 1.0 X 10-6.

The RAO for VOCs posing excess risk levels of 1 X 10-6 for inhalation should be re-evaluated based on the area of its final placement. Revise text if necessary.

27. Section 6.5.1, Groundwater, Pages 132 and 133:

The following table presents each groundwater VOC and its California Primary MCL (RWQCB 2003).

The following compounds were detected in the groundwater during previous investigations at the site: Chloroethane, 1,2-dichloroethane, 1,1-dichloroethene, trans-1,2,-dichloroethene, acetone, 2-butanone, and chloroform. Indicate the rationale for not including each compound in the table or revise the table.

28. Section 6.5.2, Remedial Action Goals, Page 134:

Methylene chloride was detected in soil samples in previous investigations at the site. Indicate the rationale for not including it in the table or revise the table.

29. Section 7.2, Remedial Strategy, Page 140:

In the event that clean stockpiled soils need to be stored on top of affected materials, they shall be placed on a suitable plastic liner until removed.

- Clean soil should not be stockpiled with affected materials. Revise the text.

- In the event that it rains during the project, indicate control measures that will be used to prevent impacted soil from migrating to clean soil.

30. Section 7.3, Media: VOC-Affected Native Soils, Data Gaps, Page 141:

The air stream from the SVE will be treated with adsorption processes before being discharged in accordance with an APCD permit.

Provide copies of all APCD permits prior to remedial activities.

Soils will be screened every 10 feet vertically, or until negligible concentrations of VOCs in soil vapor are detected.

Indicate the approximate thickness of the impacted native soils that will be screened for VOCs in this area and based on the thickness, the vertically screened soils should be implemented. Vertically screening every five feet may be recommended depending on the thickness.

31. Section 7.4.1, Groundwater Extraction and Treatment, Data Gap Sampling and Analysis, Page 144:

In accordance with the data gaps described in Section 7.4, temporary wells to measure both water quality and pressure gradients will be installed, along with wells to be used to conduct a 24- to 48-hour pump test to define aquifer parameters for a detailed extraction system design.

An estimated 15 additional Hydropunch borings will be advanced at locations across the Site.

- Since HP-01 is in the impacted plume, delineation of this area should include a Hydropunch to the west or close by to the northwest of HP-01.

- There are no proposed Hydropunch or temporary wells proposed in the southeast corner of the site in the proposed RPA. The current water quality is unknown for this area and future monitoring of this area might be recommended since the contaminated soils will be placed in this area. It would be good to have groundwater data in this area. Revise Figure 4 or indicate the rational for not having current groundwater information for this area of the site.

32. Sections 7.4.1, Groundwater Extraction and Treatment, Data Gap Sampling and Analysis, and Section 7.4.2, Groundwater Extraction Well Installation, Pages 144 and 145:

The temporary wells will be constructed of 2-inch-diameter PVC casing with 0.01-inch slotted PVC screens placed across the water table and approximately 10 feet and 5 feet of screen extending below and above the water table, respectively.

The pump test well will be constructed of 6-inch-diameter PVC casing with 0.01-inch slotted PVC screens placed across the water table and approximately 15 to 20 feet of screen extending below the water table.

The observation wells will be constructed of 2-inch-diameter PVC casing with 0.01-inch slotted PVC screens placed across the water table and approximately 10 feet and 5 feet of screen extending below and above the water table, respectively.

Based on preliminary estimates, we estimate that 13 groundwater extraction wells will be installed, to an average depth of 45 feet bgs. The extraction wells will be installed so that the screened portion of the well extends from approximately 15 feet into the shallow groundwater zone to slightly above the water table.

Indicate the rationale for the various well depths and screen depths for the above mentioned groundwater wells.

33. Section 7.4.2, Groundwater Extraction Well Installation, Page 145:

Groundwater monitoring will be conducted periodically during active remediation to monitor remedial progress and to evaluate long-term effectiveness of the selected remedial alternative following termination of active site remediation.

Indicate the length of the monitoring intervals and indicate the parameters that will be evaluated.

34. Section 7.5.2, Sludge Excavation and Biological Treatment – Soil Movements 5, 6 11, and 16, Page 151:

Sludge containing low concentrations of TPH contaminants to be placed in the soil consolidation area will be treated biologically in conjunction with final placement.

Submit the details of the products to be used and the details of the biotreatment placement on the sludge materials. Indicate how the sludge with high TPH concentrations will be managed.

35. Section 7.5.2, VOC-Affected Soil – Soil Movement 7, Pages 151 and 152:

To address these soils, suspect source soils (those with greater than 1 ppm of VOC vapor), which are believed to have been affected by the original seepage from ponds with higher VOC content, will be segregated from soils with "trace" concentrations (greater than 1 ppm VOC vapor).

Trace concentrations and suspect source soils are both referenced as greater than 1 ppm VOC vapor. Clarify the text.

Trace-concentration soils will be excavated and deposited into the SCAs for use as cap material.

It is assumed that the VOC-affected soil is the native soil below the sludge but it is not clear in the text. Clarify the text.

Three-and-a-half-foot-long, 0.5-inch-diameter steel probes will be driven to a depth of 2.5 feet. Soil gas will be extracted from the probes through 0.25-inch Tygon tubing for 30 seconds using a RAE Systems MiniRAE 2000 Handheld VOC Monitor (PID) (or similar instrument) to identify where soil vapor with greater than1 ppm VOCs is present. On no less than 10% of these samples, a Summa canister will be employed to take samples for confirmation/speciation of observed VOCs by an on-site mobile laboratory using EPA Method 8260B.

- Indicate the approximate depth to groundwater from the surface of the VOC-affected soil.
- Three purge volumes should be extracted prior to collecting a sample for the PID or summa canister since three purge volumes were used in previous soil gas investigations.
- Indicate if the MINRAE will be directly reading from the probe.

- It is not recommended to collect Summa canister samples from 2.5 bgs due to the high probability of ambient air intrusion. The preferable depth would be 5 feet bgs for sample collection with a summa canister, but water or moisture from groundwater should also be a factor in determining probe placement since water should not be within the soil gas sample. An alternative would be to use another type of sample container.

36. Section 7.5.2, Site Preparation, Page 153:

A detailed erosion control plan will be compiled and permits from Ventura County and RWQCB obtained by the grading contractor.

Submit the erosion control plan as part of the RAP addendum and submit all permits prior to remediation activities.

As appropriate, a berm will be constructed along the perimeter of the Site at locations where storm water could potentially flow off site.

Indicate what will be used for the mentioned berm.

37. Section 7.5.2, Vapor and Dust Control, Page 154:

The Site will be controlled and no excavation will be conducted in times of high wind conditions, greater than 25 miles per hour.

Gusts of wind of 25 mph exceeding fifteen minutes will require excavation activities to cease until the wind subsides. Revise the text.

38. Section 7.5.2, Utility Clearance, Page 154:

Identification of utilities in and around the excavation areas will be performed at least 48 hours before excavation begins.

Since the site is large, allow more than 48 hours for the identification of utilities.

39. Section 7.5.2, Sludge, Fill/Cap, VOC-Affected Soil, and Clean Soil Excavation and Movement Plan, Page 155:

Area 1 clean soils will be excavated to within 2 feet above groundwater, and transported for stockpiling to Area 2, the only substantial area for initial stockpiling of clean soil.

Cap/Fill material from both onsite land farms are proposed to be placed two feet above groundwater. Indicate the tidal influence of groundwater fluctuation in Area 1 and indicate the potential of contaminants from the Cap/Fill material to migrate to groundwater after placement in this area.

The estimated volume of this soil movement is 165,000 cy, intended to be large enough to accommodate the fill/cap and sludge from Areas 4 and 5.

Table FS-5 indicates a volume of 315,000 cy for soil movement 1. Clarify the text or modify the table.

40. Section 8.0, Remedial Action Implementation, Page 157:

DTSC would like status reports regarding the progress of the project. Indicate how often the status reports will be submitted.

41. Section 8.4.1, Interim Sampling, Pages 162 and 163:

Native soils within RPA – To provide additional confirmation that these soils are clean, obtain a PID reading every third load of soils being removed (identified as those soils within the tank farm and other areas).

Obtain a PID reading for every load of soils being removed.

Hazardous PCB-affected sludge – In summary, the plan indicates that excavation bottom and sidewalls will be field screened with immunoassay test kits to ensure that elevated (above hazardous criteria) concentrations of PCBs have been removed.

- Indicate manufacturer of immunoassay kits and associated detection limits.
- Indicate whether kits will be used for field analysis or sent to laboratory for analysis.
- Submit a confirmation sample location figure for this area.
- Indicate PCB cleanup goals for this area required by TSCA criteria.

42. Section 8.4.2, Confirmation Sampling, Page 164:

Sludge: Four discrete samples will be composited and submitted for PCBs by EPA Method 8082 and barium by EPA method 6010.

Submit every fifth composite sample submitted for additional analyses of PAHs by EPA Method 8310.

Add the PAH analyses to the composite of PCBs and barium.

43. Section 8.4.3, Fill Material Sampling, Pages 165 and 166:

PCBs by EPA Method 8280

Correct the typo to 8082.

For every fifth acre, collect an additional sample at a depth of 8 feet bgs and submit sample for the above suite of analyses.

Based on discussions during a meeting on September 22, 2005, it was agreed to change this sample depth to 10 feet bgs. Revise text.

Submit soil vapor samples for analysis of VOCs by EPA Method 8260.

Add methane analysis to the soil vapor samples.

44. Section 8.4.4, SCA Confirmation Sampling, Page 166:

Additionally, every fifth sample will be submitted for analyses of EPA Method 8082 for PCBs and EPA Method 6010B for barium.

Add 8310 for PAHs to this suite of analyses.

Submit dioxin sampling protocol for the SCA cap materials.

45. Section 8.6, other Quality Control Requirements, Page 168:

Method Blank – The mobile laboratory will use a syringe to collect a background air sample as a method blank for the VOC analysis.

For Method Blank protocols, the mobile lab should follow the "Advisory – Active Soil Gas Investigations" January 28, 2003, DTSC & LARWQCB. Revise text.

Data validation will ensure that all project analytical data are of reliable and comparable data quality.

Submit a QAPP or reference the QAPP that will be used for QA/QC guidelines for the field work, sampling, and sample analysis, and duplicate samples.

Data validation memorandums should be submitted as part of the data validation process.

46. Section 8.7, Decontamination, Page 169:

All equipment or trucks that come into contact with potentially affected soil or water will be decontaminated before leaving the site.

Indicate how decontamination water will be managed.

47. Table FS-5, Preliminary Soil Movement Plan:

The column describing "To Sampling Regimen": Wherever it states PID every third load, change to every load.

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

1011 North Grandview Avenue
Glendale, California 91201

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Joseph Sevrean
Hazardous Substances Scientist
Site Mitigation Branch
1011 N. Grandview Avenue
Glendale, California 91201

FROM: Frank S. Parr, CIH, CSP
Senior Industrial Hygienist
Human and Ecological Risk Division (HERD)
Industrial Hygiene and Safety Branch (IHSB)

DATE: September 7, 2005

SUBJECT: Mandalay Bay
Health and Safety Plan for Remedial Action Implementation

PCA Code: 24010 Site Number: 400443-50-43

BACKGROUND

The Site Mitigation Branch in Glendale requested the IHSB review the Site Specific Health and Safety Plan associated with the Mandalay Bay Remedial Action Implementation Project.

The Mandalay Bay Site (Site) is comprised of approximately 85.5 acres of undeveloped land located at the northeast corner of the intersection of Harbor Boulevard and West Fifth Street in Oxnard, California. The Site is located approximately 1,700 feet from the Pacific Ocean, and is bordered on the north and east by a canal (Mandalay Canal) that flows to the ocean. Beyond the canal to the north and east are agricultural fields.

The Site is bordered on the south by Fifth Street and to the west by Harbor Boulevard. Undeveloped tracts of land and a mobile home park are located further south and west of the Site. A residential area is located at the southwest corner of the intersection of Fifth Street and harbor Boulevard, diagonally across from the Site.

Approximately 50 percent of the Site is covered with various types of vegetation including poison oak, coyote bush, ice plant and willow scrub. Additionally, approximately 3,200 square feet of the Site is occupied the Ventura marsh milk vetch, a plant that was previously thought to be extinct. A former service road is located in the center of the property. The Site is relatively flat, with elevation ranging from 10 to 40 feet above mean sea level.

Prior to 1949, the Site was used primarily for disposal of oil and gas production wastes, with some storage of farming and ranching equipment. Between 1950 and 1954, unspecified waste materials were reportedly disposed of on the Site. From 1954 to 1981, the Site was operated as the former JNJ Disposal Landfill/Carney and Son Landfill, permitted oil field waste disposal facilities. Oil field waste materials were disposed of and land farmed on the property during this time period. The oil field waste materials consisted of drilling muds and cuttings, tailings, sand, formation water, and residual oil associated with the waste materials. The Site was closed in 1982. Closure activities included the destruction of lagoons, dismantling the facility and entrance buildings and grading.

Historical Site characterization activities have revealed the presence of polychlorinated biphenyls (PCBs), poly-aromatic hydrocarbons (PAHs), heavy metals, dioxins, and volatile organic hydrocarbons (VOCs).

Remedial activities which will be conducted at the Site include; excavation and subsequent disposal of contaminated soil; groundwater extraction and treatment with air stripping and vapor-phase adsorption; monitored natural attention, soil-vapor extraction/aeration and bio-treatment, Site capping; and fencing with deed restrictions.

DOCUMENT REVIEWED

The IHSB reviewed the "Health and Safety Plan for Remedial Action Implementation, North Shore at Mandalay Bay, Northeast Corner of West 5th Street and Harbor Boulevard Oxnard, California". The document was dated August 25, 2005 and received by the IHSB reviewer on August 30, 2005.

GENERAL COMMENTS

The Department of Toxic Substances Control (DTSC) has reviewed the HASP for conformance with Title 8, California Code of Regulations (8 CCR), section 5192: "Health and Safety for Hazardous Waste Operations and Emergency Response". The requirements of 40 CFR, 22 CCR, the California Health and Safety Code, as well as DTSC Policies and Procedures are also considered in the DTSC review. Please note that in addition to the requirements of these citations, the employer is responsible for the implementation of an effective Illness and Injury Prevention program which is required by the 8 CCR, sections 1509 and 3203. The requirements of those sections have not been included in this review.

The DTSC is unable to foresee all the health and safety hazards in the work-place by the review of the submitted plan. Continuous surveillance of the work-site and creation of an effective health and safety program by the employer will reduce work place injuries and reduce liability.

An industrial hygienist from the IHSB may perform a field audit in order to confirm the implementation of the HASP. The review of this HASP is not a guarantee that it will be properly and safely implemented. HASP implementation is the employer's responsibility.

SPECIFIC COMMENTS (HEALTH AND SAFETY PLAN)

1) Page 1, Section 1.0, General. The referenced section includes language indicating that project personnel and subcontractors will receive a copy of the HASP and be asked to sign a form to indicate acceptance prior to the initiation of Site activities. Please indicate whether these personnel will be afforded a chance to receive a copy of the HASP prior to field mobilization and have an opportunity to review the plan and ask questions regarding its' content. [8 CCR(b)(4)(C)].

2) Page 4, Section 5.0, Hazards of Known or Expected Chemicals of Concern. Carbon tetrachloride is identified as a contaminant of concern in the Air Monitoring Plan. However, carbon tetrachloride is not listed in the referenced section of the HASP. Please clarify for consistency.

3) Page 9, Section 6.5, Noise. An employer is obligated to quantify their employees' exposure to noise when there is a possibility of exposure to an eight-hour time-weighted average of 85 dBA. Provide personnel monitoring data from previous similar site activities or describe noise-monitoring protocols to be employed on site, including a description of the instrumentation, frequency of monitoring, and corresponding action levels. Cal-OSHA does not allow reliance upon subjective methods to demonstrate compliance with the PEL. Noise levels present on site must be taken into account when selecting the appropriate hearing protective devices (HPDs) in order to verify that the selected HPD will provide an adequate noise reduction rating. [8 CCR Group 15, Article 105 (Control of Noise Exposure)].

4) Page 9, Section 6.6, Excavations. Text within this section indicates that the atmosphere will be tested in excavations greater than 4 feet in depth where oxygen deficiency or toxic/flammable gases are likely to be present before employees are permitted to enter. Testing the atmosphere with a combustible gas indicator is prudent. The IHSB suggests that the atmosphere should be concurrently tested with a more sensitive instrument (i.e., PID and/or single gas monitors) to determine if lower concentrations of VOCs and/or specific toxic gases may be present.

5) Page 9, Section 6.6, Excavations. Please address measures to protect ground personnel (grade checkers, geotechnical personnel, etc.) from excavation and haulage vehicles in accordance with 8 CCR 1592.

6) Page 10, Section 6.7, Underground and Overhead Utilities. Please include language indicating that Underground Services Alert (USA) must be contacted a minimum of two working days prior to initiating sub-surface activities. [8 CCR 1541(b)(2)].

7) Page 10, Section 6.7, Underground and Overhead Utilities. Please verify that the proposed minimum safe distances described within this section are consistent with the requirements of 8 CCR 2946, Table 2 (Boom-type lifting or hoisting equipment clearances required from energized overhead high-voltage lines).

8) Page 11, Section 6.8, Biological Hazards. The Site description information provided in the HASP indicates that poison oak has been identified on Site. Consequently, the IHSB suggests that supplemental information be provided to Site personnel and that protective protocols specific to poison oak be addressed at the tailgate safety meetings.

9) Page 18, Section 10.0, Action Levels. Please provide the rationale for how the VOC action levels were derived.

10) Page 18, Section 10.0, Action Levels. The IHSB recommends that real-time particulate monitoring action levels for Site workers be incorporated into the referenced section of the HASP. Assuming that no other Site contaminant would drive a lower particulate action level, the IHSB suggests that the stop-work or level-C upgrade action level for workers be set to one-half of the Cal-OSHA PEL for Particulates Not Otherwise Regulated (PNOR), respirable fraction (2.5 mg/m3).

The following comments relate to areas not specifically addressed within the HASP.

11) The anticipated duration of field activities is not described within the HASP. [8 CCR 5192(c)(4)(C)].

12) Please provide background information which demonstrates ionizing radiation hazards are not a concern at this Site, or discuss monitoring protocols for radiological hazards. Employers are required to monitor the work Site for hazardous levels of ionizing radiation when the Site evaluation produces information that shows the potential for ionizing radiation or when the Site information is not sufficient to rule out these possible conditions. [8 CCR 5192(c)(6)(A)].

CONCLUSIONS AND RECOMMENDATIONS

The submitted HASP requires additional information and/or clarification. The areas where the IHSB has requested additional information and/or clarification must be corrected or clarified and resubmitted for further review.

The IHSB is available to discuss this document and related issues. Should questions arise contact Frank Parr at (818) 551-2849.

PEER REVIEW BY:

Nannette Oseas, M.S., CIH
Senior Industrial Hygienist

cc: Site File
HERD

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

1011 North Grandview Avenue
Glendale, California 91201

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Joseph Sevrean
Project Manager
Site Mitigation and Brownfields Reuse Program, Glendale

FROM: Pete Cooke, PG
Engineering Geologist
Site Mitigation and Brownfields Reuse Program, Glendale

CONCUR: Craig Christmann, PG
Senior Engineering Geologist
Geological Services Unit, Glendale

DATE: September 27, 2005

SUBJECT: Review of Feasibility Study/Remedial Action Plan, North Shore at Mandalay Bay, Oxnard, Ventura County, dated August 4, 2005, prepared by LFR Levine-Fricke

PCA: 12070 Site Code: 301242 Phase: 11

As requested, a geologist with the Site Mitigation and Brownfields Reuse Program has reviewed the subject document.

General Comments

1. The subject document references five appendices, including sampling protocols, yet none are included. The revised document should include the appendices.

2. The site boundaries are unclear, particularly along the canal. The figures in the subject document depict several potential site boundary lines. The area under consideration should be clearly indicated.

3. The VOC source(s) and plumes in the vadose zone and ground water have not been fully identified and delineated. The relationship between the occurrence of VOCs in soil matrix, soil gas and ground water is not clear. The identification of the VOC source area(s) will help clarify this relationship. A review of isoconcentration contours and ratios of contaminant concentrations of PCE, TCE and breakdown

products (such as vinyl chloride and the DCA and DCE species) may help identify the VOC source(s) and plumes. This should be incorporated into the subject document.

4. To further assist in the identification and delineation of VOC source areas, soil gas field screening with PIDs and FIDs is proposed in the subject document. While these field screening tools may assist in locating grossly contaminated areas, it is not an acceptable method of identification and delineation of the source area(s). Soil gas sampling should be performed in accordance with DTSC's 2003 "Advisory – Active Soil Gas Investigations."

5. The subject document indicates that excavation to ground water will be a part of the remedy chosen. Frequently, once an excavation is complete and the water table is exposed, a discussion of adding a chemical oxidant or reducing agent to the uncovered ground water to supplement the removal of VOCs is first presented. To avoid having to make a field decision on an issue worthy of greater consideration, the report should examine the feasibility of adding a chemical oxidant or reducing agent to the excavation bottom to ground water while it is exposed and more accessible.

Specific Comments

1. Section 1.8.1.2 states that "A more detailed evaluation of the metals is presented in Section 1.11." This detailed evaluation could not be found in the stated section, or anywhere else. The detailed evaluation should be included in the subject document.

2. Section 1.13.2 suggests that because VOC concentrations in ground water at wells MW-12 and MW-14 are elevated and VOC concentrations in proximal soil gas samples were not detected, ground water "...does not appear to serve as a source to significantly affect soil vapor..." Soil gas concentrations in the area of these wells may be low because the locations are adjacent to the canal bank which may allow horizontal migration of VOCs below the sludge layer to ambient air. Additionally, the area of elevated VOC concentrations in soil gas has no proximal ground water well to complete this comparison. Because of these two issues, the relationship between ground water and vadose zone VOC concentrations is unclear. Please see General Comment 3, above. The subject document should be revised to reflect this uncertainty.

3. Section 7.4.1 describes the installation of 2" diameter ground water monitoring wells. 2" wells are typically difficult to develop and frequently difficult to sample, due to the

narrow interior diameter. It is recommended that ground water wells be a minimum of 4" in diameter.

4. Sections 7.4.1 and 7.4.2 indicate a ground water well screen slot size of 0.01". While this slot size is sufficient for many applications, boring logs of the material into which the screens will be set should be evaluated. A sieve analysis is recommended to ensure that the screen and filter pack are properly matched to these aquifer materials.

5. Section 7.4.3 states that treated ground water "...may be stored in large tanks on site for use in dust control during excavation activities." Only water that meets the NPDES discharge requirements for this system should be applied to the site. The subject document should be revised accordingly.

6. Section 7.5.2, "Worker Safety," states, "Samples collected from depths greater than 4 feet bgs will be collected from the scoop/bucket of excavation equipment." This allowance should only apply where proper sidewall sloping can not be implemented. Samples submitted for VOC analysis should be collected directly from undisturbed, in-situ materials, not from earth-moving equipment.

7. Section 8.3 describes air monitoring and indicates that if measured concentrations of odor or dust exceed PELs or risk-based trigger levels, actions will be taken. The document should be revised to describe what those actions would be.

8. Section 8.3 indicates that high wind would temporarily suspend soil movement activities. The subject document should be revised to include a description of "high wind" and how long that wind would need to be sustained in order to temporarily suspend soil movement activities.

9. Section 8.4.1 references Section 8.6.2 for additional confirmation sampling. It appears that the referenced section should be changed to 8.4.2. The subject document should be revised accordingly.

10. Section 8.4.2 indicates sidewall and bottom confirmation sampling frequency for the "sludge" layer at one per acre. This frequency should be supplemented by additional sampling in spots that require deeper excavation, in locations that through visual examination or the use of field screening tools indicates potentially contaminated soil and in areas associated with elevated concentrations of contaminants ("hot spots") found in the formerly overlying materials. The subject document should be revised accordingly.

11. Section 8.4.2 indicates that soil samples submitted for PCB, barium and PAH analyses will be composited from four discrete samples. This should be acceptable only if the laboratory's detection limit is lower than one-fourth of the lowest concentration of concern at the site for each COC. This should be indicated in the subject document.

12. Section 8.4.2, Sludge, Third Bullet indicates composite soil sampling for VOCs. DTSC assumes this is an oversight or typographical error, as the consultant is well versed in current soil sampling protocols for VOCs. Laboratory analysis of soil samples for VOCs should be performed on discrete samples only. U.S.E.P.A. Method 5035 should be followed when collecting soil matrix VOC samples. The subject document should be revised accordingly.

13. Section 8.4.1 indicates that once VOC-impacted soils are treated, they will be placed as cap material within the SCA. Sampling of the treated material should be performed prior to placement as fill. DTSC's Clean Imported Fill Material Information Advisory, treatment batch volumes and total expected volume should be considered when determining VOC sampling frequency.

14. Section 8.5 states, "The mobile laboratory will have a flame ionization detector (FID) available for easy verification of tracer gas presence, if testing is requested by on-site DTSC personnel." This section should be modified to indicate that the FID will be used after each sample collection to confirm the presence of the tracer gas at each soil vapor collection location.

15. Figures FS-2a through FS-2f depict various cross sections. A figure displaying the location of these cross sections should be included.

For questions or comments regarding this memo, please contact Pete Cooke at (818) 551-2193.

Alan C. Lloyd, Ph. D
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

Leonard Robinson, Acting Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Joseph Sevrean
Project Manager
Site Mitigation and Brownfields Reuse Program
Glendale Office

From: Fran Collier, M.S.
Associate Toxicologist
Human and Ecological Risk Division

Date: September 27, 2005

SUBJECT: Draft Feasibility Study and Remedial Action Plan, North Shore at Mandalay Bay, Oxnard California

PCA: 12050 **Site Code:** 301242 **WP:** 11

The Human and Ecological Risk Division (HERD) has reviewed the Draft Feasibility Study and Remedial Action Plan, North Shore at Mandalay Bay, Oxnard California prepared by Levine and Fricke (LFR) and dated August 4, 2005.

Background:

The North Shore Mandalay Bay project is located at the northeast corner of West 5th Street, Oxnard, California. The parcel is approximately 91acres of currently undeveloped land located 1700 feet from the Pacific Ocean in a mixed residential and agricultural land use area within the City of Oxnard. Prior to 1949 the parcel was used for oil and gas production and storage of farming equipment. From 1950 to 1982 the property was used for disposal of oil field and other waste materials in unlined evaporation ponds and landfill areas. Approximately 340,000 cubic yards of oil field and other wastes were deposited and resulted in a sludge layer ranging from one to fifteen feet thick and located three to fifteen feet below ground surface (bgs) across much of the site. A tank farm operated in the south east corner of the site. The lagoons were destroyed, buildings and tanks removed and the site graded following closure of the disposal facility in 1982. The site is currently vacant except for some above ground oil pipelines.

The site currently has flat to rolling topography bisected by a former service road. Native soils generally consist of sand, and sandy-clay. The site is currently vegetated with coastal scrub species. A population of the Ventura marsh milk vetch, a plant species previously thought extinct, was discovered on the site in June 1997. The milk vetch community occupies approximately 3200 square feet and is currently fenced for its protection.

Shallow perched ground water is present at the site from approximately 9 to 30 ft. bgs and appears to be separated from the lower aquifer by a semi-confining layer of clayey silt. Ground water flow is generally to the north toward the Edison Canal bordering the site, and shallow ground water is influenced by tidal action. There are permanent surface water bodies on the property, although the Edison canal that drains to the ocean borders the property to the east and north.

A 1996 RAP approved by the Central Coast Regional Water Quality Control Board (RWQCB) stated that approximately 400,000 cubic yards of contaminated soil would be treated and/or deposited on site at suitable concentrations as determined by state. It added that more characterization needed. Ground water would be addressed during the remedial process. The RAP did not include off site disposal. A mutual agreement among RWQCB, DTSC and owners was signed July 22, 2004 with DTSC providing over-site for the additional characterization and remediation.

A redevelopment proposal was approved by the Oxnard City Council in 1999 with an expanded resource protection area and Ventura Marsh Milk Vetch (VMMV) protection area. The Coastal Commission certified City's amended plan in April 2002. The plan states that entire site, except VMMV protection area will be excavated to 20 ft to eliminate contaminants to prevent further contamination of ground water and marine environments.

The objectives for the FS/RAP as stated in the draft document are to:

- Update and clarify the 1996 RAP
- Identify and evaluate corrective measures and remedial alternatives for soil and groundwater at the Site
- Define the remedial action for soil and groundwater
- Provide an updated RAP and schedule for implementation of remedial action, consistent with the previous regulatory determinations

The FS/RAP identifies five alternative remedial strategies and recommends implementing the third alternative which includes:

- Groundwater extraction and treatment with air stripping and vapor phase adsorption followed by Monitored Natural Attenuation
- Excavation and off site disposal of soils containing hazardous waste levels of PCBs
- Excavation and placement of fill and cap material soils in areas that are below 10 feet below ground surface in residential areas and in the Resource Preservation Areas.

- Excavation and bio-treatment of sludge contaminated soils followed by consolidation and placement in the designated Resource Preservation Areas.
- Excavation of clean native soil and uncontaminated soils from the tank farm and other areas of the site. These soils will be used for capping the remediated site.
- Fencing and deed restricting the Resource Preservation Areas.

Following the implementation of the remedy, confirmation samples will be collected across the site to conduct a post remediation risk assessment.

Documents Reviewed

HERD reviewed the following documents in preparation of this memo:

- Draft Feasibility Study and Remedial Action Plan, North Shore at Mandalay Bay, Oxnard California prepared by Levine and Fricke (LFR) and dated August 4, 2005.

- Draft Remedial Investigation Report, North Shore at Mandalay Bay, Oxnard California prepared by Levine and Fricke (LFR) and dated May 13, 2005 in preparing this memo.

- In addition, information from a conference call and meeting held on September 22, 2005 provided clarification on treatment, soil placement and sampling strategy rationale. Based on this call, HERD understands that only clean native soils will be used in the residential areas and that the contaminated sludge and cap materials will be placed in the resource preservation areas. A revised FS/RAP will be prepared that clarifies the treatment processes and soils excavation, stockpiling and placement processes described by LFR during the conference call.

Scope of Review

HERD has reviewed this report with emphasis on those aspects that affect the risk to human health and the environment. HERD's review addressed issues concerning risk reduction from implementation of the recommended suite of remedial actions and assessment of potential post remedial risk to future residents as well as ecological receptors. Grammatical or typographical errors that do not affect the evaluation have not been noted.

General Comment:

HERD cautions that the post remedial sampling and risk assessment may not be the last step. Depending on the sampling results and assessment of risk, additional sampling and/or remediation may be needed to demonstrate that health protective goals for the residential area and RPA cap material have been achieved.

Specific Comments:

1. Abbreviations and Acronyms: HERD recommends adding the definition of SCA. Describe how the SCA differs from the RPA.

2. Section 1.11.1 "Carcinogenic Risks" Page 53: This section shows the total risk for the SWL as 6E-5; however this represents only the risk from the "native layer" as shown on Table 16 A in the RIR. HERD recommends that the total risk be changed to 2E-3 to be consistent with Appendix G "Risk Assessment" of the RIR.

3. Section 1.11.5 "Total Petroleum Hydrocarbons" Page 58: This section states that TPH affected soils pose no threat and thus could be used anywhere on site providing that the soils fit into the overall remedial and development scheme. HERD recommends deleting this statement because TPH contaminated soils also contain other COPCs such as barium, PCBs, dioxins and may have PAHs in concentrations exceeding health protective levels because reasonable detection limits could not be achieved due to matrix interference from TPH concentrations.

4. Section 3.1 and 3.2 PCBs, Dioxins and Furans (2,3,7,8-TCDD Equivalence): These sections discuss bioaccumulation of contaminants in plants. HERD recommends that language on bioavailability and bio-accumulation in these sections be made consistent to reflect that plant and animal uptake of these contaminants can occur and that these contaminants bio-concentrate in the food chain.

5. Section 5.3.1 Alternative 1 "No Action" Page 115: In order to support the assertion that this alternative is not protective, HERD recommends that a statement be added to the subsection "Overall Protection of Human Health and the Environment" that states that current conditions pose an unacceptable risk to human health and the environment in all layers and areas of the site.

6. Section 6.5.1 "RAO Attainment" Page 127: This section states that contaminants in soil will be rendered essentially immobile except by erosion, because they are essentially insoluble. HERD recommends that this section discuss erosion control on the area adjacent to the canal that is not proposed for excavation. Supplemental sampling that was completed at the end of August after the draft FS/RAP was prepared. The samples collected in the areas adjacent to the canal, showed high levels of barium and detected traces of TPH consistent with the concentrations of barium and TPH in the fill/cap material found on the rest of the site. Also, we are awaiting results of leachability studies to evaluate the solubility of materials.

7. Section 6.5.1 "RAO Attainment" Page 129: This section proposes to use a soil matrix VOC concentration of 1 ppm total VOCs as criteria for using treated soils as cap material. The September 22 call LFR clarified that none of the soils from area 8 as defined by non-detects in laboratory would be used in the residential areas. Native soils and cap material as well as the sludge material would be placed in the RPA areas. HERD recommends that the "non detect" levels be based on health based criteria for each constituent such that the cumulative risk is less than 1E-06. HERD

also recommends that the RPA cap material be evaluated for potential ecological risks.

8. Section 6.5.2 "Remedial Action Goals" Page 133 and 134: HERD recommends that the text describe and that the RAO table be footnoted to identify the meaning and use of "SCA Area Hazardous levels". Are these levels the proposed maximum concentration of contaminants in soil that can go into the area? What happens to soils that exceed these goals?

9. Section 6.5.2 "Remedial Action Goals" Page 134: The draft FS/RAP proposes using the MADEP Method 1 cleanup standards for ground water protection category GW1 and Soils Concentration Strategy S-3. Instead, HERD recommends calculating acceptable risk based thresholds for residential areas using the MADEP assessment method and California toxicity criteria for the TPH categories. Based on discussions during the conference call on September 22, HERD concurs with LFR's proposal to drop the TPH RAGs for the residential areas because only clean native soils will be placed in the residential areas. Instead LFR proposes analyze all stockpile and confirmation samples in residential soil areas for specific TPH constituents rather than the MADEP TPH categories.

10. Section 6.5.2 "Remedial Action Goals" Page 134: HERD recommends that the PCB residential target criteria be 0.22 for total PCBs, not for each Aroclor formulation. HERD recommends that PAH criteria also be included in the table.

11. Section 7.1, 7.2, 7.3, 7.4: These sections discuss the COPCs found in each area and layer. These sections qualitatively assert that COPCs are generally low in concentration and near PRG levels for both soils and VOCs provided that the indoor air path way isn't considered. The HRA shows significant risk in all areas and all levels, except for the native soil layer in the SWL and the TF&O Area. HERD recommends that the text be revised to present the quantitative information about the potential risk from exposure to these materials.

12. Section 8.9 "Post Remediation Risk Assessment" Page 170: This section proposes using exposure units of 20 acres or less. HERD recommends that LFR propose specific exposure areas based on proposed development plans prior to conducting the risk assessment.

13. Section 8.9 "Post-Remediation Risk Assessment" Page 171: The FSRAP proposes to use an outdoor inhalation factor of 0.33 (8 hrs per day) and indoor factor of 0.69 (16 hours per day). HERD recommends that standard default parameters be used and that the Uncertainty section of the risk assessment discuss that proportionate times actually spent out doors and indoors.

14. Section 8.9.2 "Potential Receptors" Page 172: States that no receptor populations will be in the RPA. HERD recommends using post-remediation concentration results from the cap areas to evaluate ecological risk to biota that may reside, forage or use

the RPA areas based on the plant communities proposed for establishment in the RPA areas. Because location and extent of the RPAs has changed, HERD recommends that the eco risk also provide maps and descriptions of the community plant associations to be planted and the potential animals that could use the RPA areas. In the September 22 call LFR added that the RPA zone adjacent to the canal will be developed as a bio-swale to treat storm water run-off. HERD recommends that the bio-swale also be included in the ecological risk assessment.

15. Section 8.9.4 "Exposure Scenarios" Page 172 First bullet: HERD recommends that the phrase "averaged over a 70 year life time" be added to the text.

16. Section 8.9.4 "Exposure Scenarios" Page 172 Fourth bullet: HERD recommends that skin surface area of 5,700 cm^2 be used for adults and 2,900 cm^2 be used for children.

17. Section 8.9.4 "Exposure Scenarios" Page 172 Fifth bullet: HERD recommends that the adult soil adherence factor of 0.07 mg/cm^2 and the child soil adherence factor of 0.2 mg/cm^2 be used.

18. Section 8.9.4 "Exposure Scenarios" Page 172 Sixth bullet: HERD recommends that the exposure frequency of 1 event per day be used for both children and adults.

19. Section 8.9.4 page 173 proposes using the PEA equations. HERD recommends using the most current equations and exposure factors to evaluate potential risk and hazard from exposure to COPCs found at the site. The PEA equations are intended for a screening level risk appraisal and this site is beyond the screening phase.

20. Section 8.9.5 "Selection of COPCs" page 174: This section proposes to eliminate chemicals that detected in less than 5 per cent of the samples at the site. Because the exposure unit is the typical lot rather than the entire site, HERD recommends that all chemicals of concern that are detected be considered in the evaluation. Any COPCs that are proposed for elimination should be clearly identified and the rationale for not including them should be clearly discussed.

Conclusions and Recommendations

HERD cautions that the post remedial sampling and risk assessment may not be the last step. Depending on the sampling results and assessment of risk, additional sampling and/or remediation may be needed to demonstrate that health protective goals for the residential area and that the environmental protection goals for the RPA cap material have been achieved.

HERD recommends that LFR prepare a revised draft FS/RAP that addresses the above comments.

The recommendations made in this document are site specific and should not be construed as a policy decision applicable to other sites. If you have any questions regarding the above comments, please feel free to contact me at (916) 255-6431 or by e-mail at fcollier @dtsc.ca. gov.

Reviewed by: Gerald A. Pollock, Ph.D. Gerald A. Pollock
Senior Toxicologist, HERD

cc: Peter Cooke, Geologic Services
Glendale Office

Alan C. Lloyd, Ph. D
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

Leonard Robinson, Acting Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Joseph Sevrean
Project Manager
Site Mitigation and Brownfields Reuse Program
Glendale Office

From: Fran Collier, M.S.
Associate Toxicologist
Human and Ecological Risk Division

Frank Parr, CIH, CSP
Senior Industrial Hygienist
Industrial Hygiene and Safety Branch
Human and Ecological Risk Division

Date: September 27, 2005

SUBJECT: Draft Feasibility Study and Remedial Action Plan, North Shore at Mandalay Bay, Oxnard California Appendix B "Air Monitoring Plan"

PCA: 12050 **Site Code:** 301242 **WP:** 11

The Human and Ecological Risk Division (HERD) has reviewed the Draft Feasibility Study and Remedial Action Plan, North Shore at Mandalay Bay, Oxnard California Appendix B "Air Monitoring Plan" (AMP) prepared by Levine and Fricke (LFR) and dated August 25, 2005.

Background:

The AMP describes air monitoring activities proposed for ensuring that the public and on site workers are protected during remedial activities.

Documents Reviewed

HERD reviewed the following documents in preparation of this memo:

- Draft Feasibility Study and Remedial Action Plan, North Shore at Mandalay Bay,

Oxnard California prepared by Levine and Fricke (LFR) and dated August 4, 2005.

- Information from a conference call and meeting held on September 22, 2005 provided clarification on treatment, soil placement and sampling strategy rationale.

Scope of Review

HERD has reviewed this report with emphasis on those aspects that affect the risk to human health and the environment. HERD's review addressed issues concerning risk reduction from implementation of the recommended suite of remedial actions and assessment of potential post remedial risk to future residents as well as ecological receptors. Grammatical or typographical errors that do not affect the evaluation have not been noted.

General Comment:

HERD comments are presented in two sections. Both sets of comments pertain to perimeter or fenceline air monitoring to protect off-site residents and other receptors. Both Fran Collier and Frank Parr prepared these comments. The comments are identified by author.

Perimeter Air Monitoring (Fran Collier)

1. HERD recommends that the AMP describe the "non-work day" monitoring strategy.

2. HERD recommends that the AMP estimate the amount of time remedial activities will be occurring.

3. Section 2.0 "Background": This section appears to be material extracted from the main body of the FS/RAP text. As such HERD recommends that the AMP also address the FS/RAP comments as appropriate.

4. Section 2.0 "Background" Page 12: HERD recommends that the paragraph describing the general soils treatment processes be expanded to provide specific information about the technologies and that it describe how air monitoring will address potential emissions during excavation, stockpiling, treatment, and soils movement for final placement.

5. Section 4.2.1" Workday Trigger Level Process" Page 17: HERD recommends that the AMP describe what is meant by "continuous periodic analysis".

6. Section 4.2.2 "Workday Trigger Levels" Page18: HERD recommends that the AMP reference the source(s) of the proposed acute action levels that will be used if OEHHA chronic action levels are not available.

7. Section 4.2.2 "Workday Trigger Levels" Page18: HERD recommends that the AMP describe the rationale for selecting 10% of chronic action level or PEL as thresholds for action and provide references supporting the 10% level.

8. Section 4.3.1.1 "Total VOCs" Page 19: Tier 1 levels For VOCs are proposed for 10 ppm above ambient levels. HERD recommends that the AMP provide a rationale for the 10 ppm and describe how this is health protective for off site residents. The proposed action is increased air monitoring. Describe how increased monitoring alone is protective of public health. Tier 2 level of 50 ppm above ambient levels should also be documented and described for protectiveness.

9. Section 4.3.2.2 "Metals" Page 21: This section provides a method for establishing action levels for dust based on the maximum concentration of barium at the site. HERD recommends that an incremental threshold of 50 ug/m^3 dust between upwind and downwind perimeter monitors be used as an action level to trigger further dust suppression measures during remediation. HERD recommends that LFR provide calculations showing that the acceptable health protective threshold concentration of COCs in fugitive dust is greater than the 50 ug/m^3 using the following equation and MRLs:

    a) Action level for the chemical concentration in Air = (Total Dust Conc. in Air) X (Maximum Soil Conc.) X (CF)

    b) mg chemical/m^3 = (mgDust/m^3) X (mg Chemical/kg soil) X (1 kg soil/1E-06 mg soil)

    c) For example, If a site action level for PCBs is 0.0001mg/m^3 based on the ATSDR Intermediate Oral MRL converted to an equivalent inhalation dose, and if the highest onsite PCB Concentration was 770 mg/kg; using the above equation:

        i. mg PCB/m^3 = (Y mg total dust/ m^3) X (770 mg PCB/ kg soil) X (1 kg soil/ 1E-06 mg soil)

    d) Y mg dust/m^3 = 0.136 mg Total Dust/ m^3

    e) 0.136 mg dust/m^3 is greater than the dust threshold of 50 ug/m^3 incremental fugative dust emission from the site. Therefore the 50 ug/m^3 total dust threshold is protective for the population downwind of the site.

10. Section 5.1"Monitoring Locations and Frequency" Page 23: The AMP proposes one day of background sampling prior to initiating field activities. HERD recommends that the AMP discuss the rationale for doing only one day of sampling and that the AMP describe how many monitors and where they will be placed. HERD recommends that background monitoring occur daily for a full week to improve

understanding of site specific meteorological conditions, dust generation and contaminant concentrations in fugitive dust at the site.

11. Section 5.2.2. "Time Integrated Sampling Equipment" Pages 24, 25 and 26: HERD recommends that perimeter air monitoring samples that are being collected for VOC, PCB, dioxin and metals use analysis methods with detection limits that are below health protective levels. HERD recommends that a table of analysis methods and detection limits be provided in the revised AMP.

12. Section 5.2.2.3 "Target PAHs" Page 25: The AMP proposes using personal pumps to collect air at flow rate of 0.5 to 1.0 liter/min. HERD recommends that LFR describe the rationale for the low flow rate and the different flow rates proposed for PAHs than for PCBs/Dioxins (1 and 2 liter/min).

Perimeter Air Monitoring (Frank Parr)

1. Page 15, Section 4.0, Protection of Worker Safety and Public Health: Text within this section indicates that airborne concentrations of over 10 indicator substances in the air at several locations in and outside of work areas will be measured. What are the 10 compounds? The number of indicator compounds listed here is not consistent with language contained in section 4.2.1 of the Air Monitoring Plan (AMP) which indicates 12 indicator compounds will be measured. Please reconcile for consistency.

2. Page 19, Section 4.3.1.1, Total VOCs: The total VOC action levels are problematic. The following issues associated with these action levels need to be addressed;

    a. Tier 1 action level is set at 10 ppm above ambient due to the low PELs for benzene, (1 ppm PEL, 5 ppm STEL) 1,2 -DCA (1 ppm PEL, 4 ppm STEL) and vinyl chloride (1 ppm PEL). The Tier 1 action level would theoretically allow exposure above the PEL without exceeding the action level. The referenced section of the AMP indicates that if the Tier 1 action level is exceeded "air monitoring will be increased at the excavation area and at the perimeter of the Site" will occur.

    b. The Tier 2 action level is set at 50 ppm above ambient. In the event that the Tier 2 action level is exceeded, the referenced section of the AMP indicates that "the rate of the excavation will be reduced and the open face of the excavation will be sprayed with water to prevent off-site migration of dust". The Tier 2 action level would theoretically allow exposure above the PEL for benzene, carbon tetrachloride, 1,2-DCA, tetrachloroethene, trichloroethene, trimethylbenzene, and vinyl chloride in addition to exceeding several of these compounds STEL's without exceeding the action level.
        i. There does not appear to be any airborne VOC concentration which will prompt job shut down.

c. The lamp voltage of the PID is not sufficient to ionize all of the volatile COC's listed (i.e. 1,2-DCA and carbon tetrachloride).

d. Please clarify whether the PID relative response factor data was consulted in the development of the VOC action levels.

3. Page 20, Section 4.3.1.2., Individual VOCs: The IHSB recommends that "mini-cans" be used to collect air samples for subsequent analysis via EPA TO-15/OSHA 2120 method. Passive samplers rely upon air movement associated with the wearer to provide an adequate diffusion rate. Consequently, these may not be ideally suited for placement at fixed monitoring locations. Additionally, the vinyl chloride action level must be revised. This appears to be an artifact from an incorrectly listed VC PEL listed in Table 2.

4. Page 20, Section 4.3.2.1, Total Dust: The Tier 1 level for total dust is set at 1 mg/m^3 above ambient. In the event that this level is exceeded the referenced section of the AMP indicates that "air monitoring will be increased at the excavation area and at the perimeter of the Site". The Tier 2 action level is set at 7.8 mg/m^3 above ambient. In the event that the Tier 2 action level is exceeded, the referenced section of the AMP indicates that "the rate of the excavation will be reduced and the open face of the excavation will be sprayed with water to prevent off-site migration of dust". Without implementing size separation, the 7.8 mg/m^3 total dust action level would exceed the 5 mg/m^3 respirable dust PEL for particulates not otherwise classified (PNOC). Additionally, the California Air Resources Board (CARB) has a 50ug/m^3 24-hour TWA for respirable particulate matter allowable threshold. Both Tier 1 and Tier 2 action levels exceed this value.

5. Page 22, Section 5.1, Monitoring Locations and Frequency: Please describe how all monitoring and sampling devices will be deployed at breathing zone height (i.e., tripod, etc.).

6. Page 25, Section 5.2.2.3, Target PAHs: Text within this section indicates that "Selected pesticide samples will be analyzed via NIOSH Method 7300". Are pesticides a COC? If so, why are they addressed within the PAH section. The referenced NIOSH method described within the PAH section in NIOSH 7300. NIOSH 7300 is utilized for the analysis of metals (elemental) via ICP-AES. The appropriate method for PAH analysis would be NIOSH 5506.

7. Page 26, Section 5.2.3, Meteorological Monitoring: Please provide wind rose data for the Site.

8. Page 28, Section 7.0, Dust Control: Please describe provisions to control and mitigate "track-out" from Site vehicles.

9. Table 2, Action Limits for Worker Safety and Community Perimeter Air Monitoring, Mandalay Bay Site, Oxnard, California: Please provide the correct Tier 1 and Tier 2 values for vinyl chloride .

10. Table 2, Action Limits for Worker Safety and Community Perimeter Air Monitoring, Mandalay Bay Site, Oxnard, California: Please reconcile the listed COCs outlined in the referenced table with those identified in the site-specific HASP.

Conclusions and Recommendations

HERD recommends that an incremental threshold of 50 ug/m^3 dust between upwind and downwind perimeter monitors be used as an action level to trigger further dust suppression measures during remediation.

HERD recommends that LFR prepare a revised draft FS/RAP Appendix B "Air Monitoring" that addresses the above comments.

The recommendations made in this document are site specific and should not be construed as a policy decision applicable to other sites. If you have any questions regarding the above comments, please feel free to contact me at (916) 255-6431 or by e-mail at fcollier @dtsc.ca. gov.

Reviewed by: Gerald A. Pollock, Ph.D.
Senior Toxicologist, HERD

cc: Peter Cooke, Geologic Services
Glendale Office

October 21, 2005 002-10261-00

Mr. Joseph Sevrean
Project Manager
Department of Toxic Substances Control
Site Mitigation and Brownfields Reuse Program
1011 North Grandview Avenue
Glendale, California 91201

Subject: Response to DTSC Comments on the Feasibility Study/Remedial Action Plan, North Shore at Mandalay Bay, Oxnard, Ventura County, dated August 4, 2005

Dear Mr. Sevrean:

LFR Levine·Fricke (LFR) is in receipt of DTSC's comments on the Feasibility Study/Remedial Action Plan (FS/RAP) for the North Shore at Mandalay Bay property in Oxnard, California ("the Site"). This letter provides our responses to Department of Toxic Substances Control (DTSC) comments on the FS/RAP. DTSC's comments are presented below, followed by LFR's responses in *blue italic font*.

REVIEW OF FEASIBILITY STUDY/REMEDIAL ACTION PLAN, NORTH SHORE AT MANDALAY BAY, OXNARD, VENTURA COUNTY, DATED AUGUST 4, 2005, PREPARED BY LFR LEVINE-FRICKE (PCA: 12070, Site Code: 301242, Phase: 11) – authored by Pete Cooke, PG, Engineering Geologist, Site Mitigation and Brownfields Reuse Program

General Comments:

1. The subject document references five appendices, including sampling protocols, yet none are included. The revised document should include the appendices.

   LFR Response: *Referenced appendices, including sampling protocols, are included in the revised document, with some previously submitted to DTSC and commented on. The revised appendices are included for final approval.*

2. The site boundaries are unclear, particularly along the canal. The figures in the subject document depict several potential site boundary lines. The area under consideration should be clearly indicated.

   LFR Response: *The figures have been revised to clearly depict the site boundaries.*

3. The VOC source(s) and plumes in the vadose zone and ground water have not been fully identified and delineated. The relationship between the occurrence of VOCs in soil matrix, soil gas and ground water is not clear. The identification of the VOC source area(s) will help clarify this relationship. A review of isoconcentration contours and ratios of contaminant concentrations of PCE, TCE and breakdown products (such as vinyl chloride and the DCA and DCE species) may help identify the VOC source(s) and plumes. This should be incorporated into the subject document.

   LFR Response: *Based on current data, the VOC plume, although not fully delineated, has been identified, and its location generally understood. Evaluations of the detected VOC concentrations within the delineated plume indicated that the most likely source point/area is in the immediate vicinity of soil vapor probe SG-36. During the remedial activities, efforts will be made to further identify and segregate the VOC-affected materials for appropriate handling.*

4. To further assist in the identification and delineation of VOC source areas, soil gas field screening with PIDs and FIDs is proposed in the subject document. While these field screening tools may assist in locating grossly contaminated areas, it is not an acceptable method of identification and delineation of the source area(s). Soil gas sampling should be performed in accordance with DTSC's 2003 "Advisory – Active Soil Gas Investigations."

   LFR Response: *Per discussion with Joe Sevrean and Pete Cooke (DTSC), a gridded screening with PID/FID is proposed to be conducted within the VOC-affected area in conjunction with other screening procedures (discussed below) to assist in the identification of the source within the VOC-affected area. Additional soil sampling will be conducted to confirm areas of elevated soil vapor readings to assist in the determination of whether soils within a given grid area represent a source area requiring treatment or whether the material is suitable for use as cap material in the SCA without treatment. Delineation of the outer limits of the VOC-affected area will be conducted in accordance with DTSC's 2003 Advisory for Active Soil Gas Investigations. It should also be noted that a final soil vapor sampling program will be conducted upon completion of remediation activities throughout the Site to document that remediation was successfully completed.*

   The primary rationale for excavating the VOC-affected area is the sensitivity of modeling low concentrations of VOCs in soil vapor with the Johnson and Ettinger model, which calculates an appreciable risk. The risk is due to the conservatism associated with estimating the vapor flux up through the soil column and into a hypothetical house that resides directly above this affected area. If no buildings were placed above these materials and just an outdoor exposure was estimated, there would be de minimus risk associated with the bulk of the soil vapor concentrations detected to date. Furthermore, in only limited instances do the total VOCs in soil vapor equate to greater than 1 part per million (ppm), suggesting that the total mass is not significant. It is in the areas with elevated soil vapor readings (defined herein as those greater than 1 ppm total VOCs of compounds tested by EPA Method 8260) that additional soil sampling is required to determine the actual presence of potential source soils, as soil vapor results do not directly identify the source.

Several screening procedures will be used, in conjunction with other sampling, to assist in segregation of soils requiring treatment from those soils not requiring treatment. Specifically, the sampling plan has been modified to include (upon removal of the cap/fill and sludge layers, which based on the results of previous soil sampling, have not been shown to contain elevated concentrations of VOCs and will be placed within the SCA due to the presence of other constituents):

- *Screening with a PID of samples on 50-foot centers for soil vapor concentrations exceeding 1 ppm.*

- *Collect one soil vapor screening sample for every four PID samples[1] and submit to an on-site mobile laboratory for analysis of target analytes by EPA Method 8021B. The sample is termed screening because the probe will have a reduced equilibration time (15 minutes instead of 30) and reduced run time (run until the target analytes are eluded (e.g., PCE, 1,2-DCA, vinyl chloride) and then stopped). Because we propose using this sampling technique as a screening technique for identification of source materials only, and not for final delineation of all VOC-affected soils, we believe it offers an effective way to increase the speed and amount of data available upon which to focus soil sampling efforts (which will be used to determine whether material can be sent for use as cap material in the SCA or whether it requires treatment [SVE] prior to use as cap material in the SCA). Additionally, while a shortened equilibration time may impact the readings in instances where the concentrations of volatiles are very low, since the purpose of this screening is to identify potential source areas (e.g., soils with higher concentrations), a shortened equilibration time should not present an issue. Approximately 10% of these samples will be confirmed with sampling in accordance with the Advisory for assurance that this screening methodology is effective. Additionally, final delineation sampling along the outer boundary will be conducted in accordance with the Advisory. Given that the effectiveness of the different tools being proposed is not yet determined, and will not be until the effort is underway, the proposed ratios and reliance on the various methodologies will likely be amended in cooperation with the DTSC.*

- *Collect soil samples in areas where elevated soil vapor readings are detected and submit for analysis by EPA Method 8260. (For the purposes of this screening event, elevated soil vapor concentrations will be initially considered to be elevated if the total EPA Method 8260 analyte suite of VOC concentration exceeds 1 ppm. This criterion may be modified in coordination with the DTSC once correlation sampling with soil data has been*

---

[1] *The 1 to 4 ratio is an initial proposed screening criterion. Upon completion of several rounds of sampling, and in consultation with DTSC, it may be necessary to modify this strategy depending upon the ease or difficulty of correlation. Assuming that an adequate correlation exists, it may be determined that screening analysis be conducted on those areas with FID readings greater than a particular value. We understand and expect that this process will be conducted with DTSC in a manner strategic to identifying the source area, recognizing that the purpose of this exercise is to identify those soils requiring treatment (e.g., source soils) in addition to identifying the perimeter of the soil vapor-affected soils.*

completed). For those soil samples that have VOC concentrations below the industrial PRGs, the materials can be transferred to the RPA for use as CAP materials in the SCA. If the soil sample has VOC concentrations greater than the industrial PRG, the material will be transferred to the treatment area for treatment via SVE. (Soils will be considered treated when the stockpile soil samples meet industrial PRG criteria, at which time the treated stockpiles will be transferred to the RPA for use as CAP material on the SCA).

- *This delineation will be conducted under the oversight of and with discussions with DTSC. Delineation of the VOC-affected area will be made with the concurrence and/or guidance of DTSC.*

5. The subject document indicates that excavation to ground water will be a part of the remedy chosen. Frequently, once an excavation is complete and the water table is exposed, a discussion of adding a chemical oxidant or reducing agent to the uncovered ground water to supplement the removal of VOCs is first presented. To avoid having to make a field decision on an issue worthy of greater consideration, the report should examine the feasibility of adding a chemical oxidant or reducing agent to the excavation bottom to ground water while it is exposed and more accessible.

   LFR Response: *LFR considered these technologies, and is not opposed to their use. The FS briefly presents these technologies, and does not screen them out, but brings the pump and treat option forward for consideration as an equivalent technology. As dewatering is already being performed on-site, and the discharge is similar, we believe that pump and treat technology would prove cost effective. However, as we implement the additional characterization called for in the FS/RAP, we will consider the other equivalent technologies not screened. This concept has been more clearly presented in the FS, and the RAP Addendum will be modified to include an evaluation of equivalent technologies as part of the groundwater evaluation.*

Specific Comments:

1. Section 1.8.1.2 states that "A more detailed evaluation of the metals is presented in Section 1.11." This detailed evaluation could not be found in the stated section, or anywhere else. The detailed evaluation should be included in the subject document.

   LFR Response: *The text within Section 1.8.1.2 (at the end of the paragraph discussing arsenic results) was modified to instead include a summary statement based on the comparison to the expanded background dataset as the discussion on arsenic did contain detail but was limited on conclusion. Additionally, specific RI tables are referenced for additional details regarding specific statistical summaries generated for each area and layer.*

2. Section 1.13.2 suggests that because VOC concentrations in ground water at wells MW-12 and MW-14 are elevated and VOC concentrations in proximal soil gas samples were not

detected, ground water "…does not appear to serve as a source to significantly affect soil vapor…" Soil gas concentrations in the area of these wells may be low because the locations are adjacent to the canal bank which may allow horizontal migration of VOCs below the sludge layer to ambient air. Additionally, the area of elevated VOC concentrations in soil gas has no proximal ground water well to complete this comparison. Because of these two issues, the relationship between ground water and vadose zone VOC concentrations is unclear. Please see General Comment 3, above. The subject document should be revised to reflect this uncertainty.

LFR Response: *Due to the absence of proximal groundwater well within the area of elevated soil gas concentration, the relationship between groundwater and vadose zone VOC concentrations could not be established at this time. This relationship, however, will be understood when LFR implements the proposed Data Gap Sampling and Analysis discussed under Section 7.4.1. Further, while the areas where groundwater and soil gas data are nearer to a bank, they still are a reasonable distance from this influence, making the observed relationship plausible, or even likely. The relationship of groundwater to soil gas will be better understood following the proposed work. Regardless, the groundwater will be remediated to significantly reduce existing concentrations, with monitored natural attenuation used to attain final water quality objectives.*

3. Section 7.4.1 describes the installation of 2" diameter ground water monitoring wells. 2" wells are typically difficult to develop and frequently difficult to sample, due to the narrow interior diameter. It is recommended that ground water wells be a minimum of 4" in diameter.

   LFR Response: *LFR has installed, developed, and sampled quite a number of 2-inch diameter groundwater monitoring wells at this site, and did not encounter difficulty in developing and sampling due to the narrow interior diameter. Considering the wells will be installed on a temporary basis, LFR still proposes the usage of 2-inch diameter casing for the temporary groundwater monitoring wells for cost effectiveness purposes. Well installation will be accomplished with push technologies, shortening the time and cost for well installation.*

4. Sections 7.4.1 and 7.4.2 indicate a ground water well screen slot size of 0.01". While this slot size is sufficient for many applications, boring logs of the material into which the screens will be set should be evaluated. A sieve analysis is recommended to ensure that the screen and filter pack are properly matched to these aquifer materials.

   LFR Response: *LFR has reviewed available soil boring logs and sieve analysis results from previous geotechnical site investigation included in the RI FS/RAP and found that the use of 0.010-inch slot screen is conservative and appropriate for sampling purposes. Larger screen sizes could be employed, with less hydraulic loss across the well screen, but the smaller screen specified will perform the use intended with less concern for the formation violating the design.*

5. Section 7.4.3 states that treated ground water "…may be stored in large tanks on site for use in dust control during excavation activities." Only water that meets the NPDES discharge requirements for this system should be applied to the site. The subject document should be revised accordingly.

LFR Response: *Only water that meets NPDES discharge requirements will be utilized for dust suppression activities, with all affected groundwater extracted treated with liquid phase activated carbon, or equivalent technology. Any other use of the water would violate the standard NPDES permit that is being acquired from the RWQCB (to be provided to DTSC upon receipt). No discharge or use of groundwater from the site can or will occur until this permit has been acquired and copied to DTSC.*

6. Section 7.5.2, "Worker Safety," states, "Samples collected from depths greater than 4 feet bgs will be collected from the scoop/bucket of excavation equipment." This allowance should only apply where proper sidewall sloping can not be implemented. Samples submitted for VOC analysis should be collected directly from undisturbed, in-situ materials, not from earth-moving equipment.

LFR Response: *As the bulk of earthmoving efforts are expected to involve large areas with proper sloping and ingress/egress access points, sampling of undisturbed, in-situ materials will occur. In the event that earthmoving efforts involve a small excavation pit, with a bottom greater than 4 feet and lacking proper ingress/egress and sloping, samples will be collected from earthmoving equipment as expeditiously as possible to minimize the potential for volatilization.*

7. Section 8.3 describes air monitoring and indicates that if measured concentrations of odor or dust exceed PELs or risk-based trigger levels, actions will be taken. The document should be revised to describe what those actions would be.

LFR Response: *The document has been revised to indicate that additional fogging/spraying of water will be applied during excavation if trigger levels are exceeded.*

8. Section 8.3 indicates that high wind would temporarily suspend soil movement activities. The subject document should be revised to include a description of "high wind" and how long that wind would need to be sustained in order to temporarily suspend soil movement activities.

LFR Response: *The document has been revised to clarify that high wind will be considered sustained wind speeds greater than 25 mph for over fifteen minutes, or winds gusting over 40 mph instantaneously, in accordance with the EIR conditions.*

9. Section 8.4.1 references Section 8.6.2 for additional confirmation sampling. It appears that the referenced section should be changed to 8.4.2. The subject document should be revised accordingly.

LFR Response: *Section 8.4.1 has been modified to reflect the reference to confirmation sampling in Section 8.4.2.*

10. Section 8.4.2 indicates sidewall and bottom confirmation sampling frequency for the "sludge" layer at one per acre. This frequency should be supplemented by additional sampling in spots that require deeper excavation, in locations that through visual examination or the use of field screening tools indicates potentially contaminated soil and in areas associated with elevated concentrations of contaminants ("hot spots") found in the formerly overlying materials. The subject document should be revised accordingly.

    LFR Response: *We note that the transport of COCs beneath sludge into native soils was limited to VOCs in one area of the Site, beneath the northeast landfarm. In the event that "hot spots" are identified, sampling and analysis will be implemented to characterize the nature and extent of each "hot spot." The use of a barium field kit for screening purposes, PIDs and FIDs with soil and soil gas analysis will be employed. These concepts have been added to the RAP.*

11. Section 8.4.2 indicates that soil samples submitted for PCB, barium and PAH analyses will be composited from four discrete samples. This should be acceptable only if the laboratory's detection limit is lower than one-fourth of the lowest concentration of concern at the site for each COC. This should be indicated in the subject document.

    LFR Response: *Section 8.4.2 has been revised to reflect that consideration of the laboratory detection limits such that compositing will be used only when the laboratory's detection limit is lower than one-fourth of the remedial action objective for each COC being composited.*

12. Section 8.4.2, Sludge, Third Bullet indicates composite soil sampling for VOCs. DTSC assumes this is an oversight or typographical error, as the consultant is well versed in current soil sampling protocols for VOCs. Laboratory analysis of soil samples for VOCs should be performed on discrete samples only. U.S.E.P.A. Method 5035 should be followed when collecting soil matrix VOC samples. The subject document should be revised accordingly.

    LFR Response: *Section 8.4.2 has been revised to reflect that VOC analyses will be conducted on discrete samples collected using EPA Method 5035.*

13. Section 8.4.1 indicates that once VOC-impacted soils are treated, they will be placed as cap material within the SCA. Sampling of the treated material should be performed prior to placement as fill. DTSC's Clean Imported Fill Material Information Advisory, treatment batch volumes and total expected volume should be considered when determining VOC sampling frequency.

    LFR Response: *Confirmation sampling conducted upon completion of treatment of VOC-affected soils and prior to placement as cap material in the SCA will be conducted at the following frequency (depending upon the volume of soil being treated):*

- *Up to 1,000 cubic yards – 1 sample per 250 cubic yards*
- *1,000 to 5,000 cubic yards – 1 sample per 500 cubic yards*
- *Greater than 5,000 cubic yards – 1 sample per 1,000 cubic yards*

The FS/RAP has been modified to reflect this sampling frequency.

14. Section 8.5 states, "The mobile laboratory will have a flame ionization detector (FID) available for easy verification of tracer gas presence, if testing is requested by on-site DTSC personnel." This section should be modified to indicate that the FID will be used after each sample collection to confirm the presence of the tracer gas at each soil vapor collection location.

    LFR Response: *Testing of tracer gas will be conducted for each soil vapor sample analyzed for VOC constituents by EPA Method 8260B.*

15. Figures FS-2a through FS-2f depict various cross sections. A figure displaying the location of these cross sections should be included.

    LFR Response: *Figure FS-2 has been added to show locations of the cross-section lines.*

COMMENTS ON THE DRAFT FEASIBILITY STUDY / REMEDIAL ACTION PLAN REPORT, NORTH SHORE AT MANDALAY BAY, OXNARD, CALIFORNIA – authored by Joseph Sevrean, Project Manager, Site Mitigation and Brownfields Reuse Program

General Comments:

1. Include a table to cross-reference each comment with a response in the revised document.

    LFR Response: *This response to comment letter constitutes the cross-referenced comment / response for each DTSC commenter.*

2. RAP Addenda should be submitted and approved prior to implementation of the following items:

    Groundwater dewatering

    Ex Situ SVE soil treatment

    Biotreatment

    In Situ SVE/Aeration treatment

    Groundwater Extraction treatment with Air Stripping and Vapor-Phase Adsorption

    Onsite and offsite contaminated soil transportation plan

    Contractor Decontamination Plan

Confirmation sample location figures

LFR Response: *RAP Addenda will be prepared and submitted prior to implementation of the above-mentioned items. The specific addenda, their nature, the subjects addressed, and other concepts are described and defined in a new section of the FS/RAP (Section 8.1.4). The addenda listed above have been incorporated, as well as other issues called out in other places in DTSC comments.*

Specific Comments:

Quotes from the Report are in *underlined Italics*, immediately followed by DTSC comments.

1. Section 1.2, Site Description, Page 3:

The subject property is located approximately 1700 feet from the Pacific Ocean, and is bordered on the north and east by a canal (referred herein as the Mandalay Canal and in some historical reports as the Edison Canal) that flows to the ocean.

The canal does not completely border the site boundaries to the north. Indicate what occupies the rest of the site's adjacent northern boundary.

LFR Response: *The text has been revised to indicate that the canal borders the Site to the east and northeast. The Site is bordered on the northwest by an undeveloped tract of land owned by Reliant Energy.*

Indicate the source of the water in the Mandalay Canal that flows to the ocean.

LFR Response: *Section 1.3, Surrounding Properties, indicated that the water in the canal originates from the Channel Island Harbor 3 miles from the power plant located northwest of the Site.*

The Milk-Vetch occupies approximately 3,200 square feet of the approximate 90-acre Site.

Indicate the dimensions of the area preserved for the Milk-Vetch.

LFR Response: *The actual Milk Vetch colony is approximately 3,200 square feet. The Milk Vetch Preservation area extends about 100 feet beyond the extent of the actual colony area. The dimensions of the Milk-Vetch preservation area are approximately 250 feet by 300 feet, or 75,000 square feet (1.7 acres). The FS has been modified to provide this detail and clarity.*

The Site is relatively flat, with an elevation ranging from 10 to 40 feet above mean sea level.

Indicate the elevation of the canal on the northern and eastern borders the Site.

LFR Response: *Based on available topographic survey map of the Site (included as an attachment to a geotechnical investigation conducted in 2001), the elevation of the canal on both the northeastern and eastern borders of the Site was 3.5 feet above mean sea level (msl). This information has been added to the FS.*

2. Section 1.5.3, Regulatory Consideration of Development and Remedial Plans, Pages 7 and 8:

The basic elements of the Memorandum of Understanding (MOU) between project applicant and California Department of Fish and Game (CDFG) were included as mitigation measures for the project within the Certified EIR. As part of the MOU, a portion of the Site will be protected from any activity to protect the Ventura Marsh Milk-Vetch in a preservation area, which is within a larger Resource Protection Area (RPA) that will restore lost habitat, and will also provide additional protection and buffer to the Milk-Vetch Preservation Area (MVPA).

Indicate whether any monitoring of the MVPA is being conducted and submit the contact information.

LFR Response: *As part of the EIR conditions, Trimark is required to have a biological monitor present during construction activities. Our understanding is that Impact Sciences, Inc., the EIR and MVPA authors, will provide this monitor. Larry Ludwig of Impact Sciences will be coordinating this. His number is (805)437-1900.*

The City of Oxnard subsequently accepted all of the suggested modifications imposed by the California Coastal Commission, and now has a fully certified site-specific Local Coastal Program Amendment (LCPA) to govern the development of the North Shore project. Page 5152 of the LCPA discusses the different roles of the involved parties, and constraints of site use.

Provide a copy of page 5152 of the LCPA.

LFR Response: *An electronic copy of the LCPA is attached to Joe Sevrean's copy of this Response to Comment letter.*

3. Section 1.6.1.2, Analytical Results, Page 11:

Barium was detected at concentrations exceeding its TTLC in five soil samples collected at depths ranging from 2 to 8 bgs.

Indicate the highest concentration of Barium detected during this investigation.

LFR Response: *Section 1.6.1.2 has been amended to include the highest barium concentration detected during the Canonie investigation (32,200 mg/kg).*

4. Section 1.6.4.2, Analytical Results, Pages 16 and 17:

Acetone and/or methylene chloride was detected in five of the seven soil samples at concentrations ranging from 11 mg/kg to 160 mg/kg. These analytes are common laboratory contaminants.

Usually laboratory contaminants are detected around the detection limit and not at gross lab contamination at levels of 11 mg/kg to 160 mg/kg which are unacceptable and usually do not pass the QA/QC criteria. Indicate whether these compounds were detected in the soil gas samples for VOC analysis.

LFR Response: *The second sentence has been deleted. For clarification, Section 1.6.4.2 referenced above discusses the results of the Environmental Science and Engineering investigation conducted in 1996. Of the 100 soil vapor samples subsequently collected by LFR throughout the Site, only one sample contained a detectable concentration of methylene chloride. The chemical was not selected as a COPC due to its very low frequency of detection (e.g., 1%). Acetone was not an analyte of the soil vapor analytical suite analyzed by EPA Method 8260B but is not a significant chemical of concern (e.g., the PRG for acetone in soil is 14,000 mg/kg).*

5. Section 1.6.6.2, Analytical Results, Page 20:

Metals: Arsenic (25 samples), barium (5 samples), chromium (47 samples), lead (45 samples), nickel (47 samples), selenium (45 samples), zinc (33 samples), and mercury (15 samples) were detected at concentrations above 10 times their respective STLCs.

Based on STLC criteria, there are quite a few samples with metal concentrations with the potential to leach. Since the soil will remain onsite, submit a table showing the sample location, depth, concentration, and the impacted media (ie., cap, sludge).

LFR Response: *A summary of metals results was provided as Table RI-2a with sample locations, depths, concentrations, and impacted media indicated. In addition, we note that analyses completed that tested the potential for metal leaching found that leaching potential was not of significant concern under site conditions. Appendix J of the RI presents and discusses these results. Additionally, the comparison to 10 times the STLC was originally provided for comparison to determine whether additional testing for leaching potential was necessary. Since leaching potential has subsequently been evaluated, the referenced sentence has been deleted as it is no longer a relevant comparison.*

Hydrocarbons: TPH was detected in 33 of the 45 samples analyzed.

Indicate the highest concentrations for the various ranges of TPH and indicate the sample location, depth, and impacted media.

LFR Response: *LFR has revised the text to indicate highest concentrations for various ranges of TPH, location, depth, and impacted media.*

PCBs: PCBs were detected at concentrations ranging from 0.054 mg/kg to 270 mg/kg in 55 soil samples collected at depths ranging from 2 to 9 feet bgs.

Indicate the sample location, depth, and impacted media for the PCB concentration of 270 mg/kg.

LFR Response: *LFR has revised the text to indicate the sample location, depth, and impacted media for the 270 mg/kg PCB concentration.*

6. Section 1.6.7.2, Sampling, Soil Sampling, Page 25:

These physical parameters will be incorporated in the fate and transport models.

Indicate when the fate and transport models will be submitted for evaluation.

LFR Response: *The physical parameter data were collected for potential use in fate and transport modeling. The results suggested that the physical parameters of some Site soils were similar to default values (as provided in the Johnson and Ettinger lookup tables) for loamy sands, the predominant soil type at the Site, confirming that default parameters were largely representative of site conditions. No other numerical fate and transport models were employed.*

7. Section 1.6.7.2, Sampling, Soil Analytical Results, Pages 25, 26, and 27:

Metals: Barium (21 samples), chromium (20) samples, and lead (1 sample) were detected at concentrations above 10 times their respective STLCs in samples collected from fill and sludge materials.

Since the soil will remain onsite, submit a table showing the sample location, depth, concentration, and the impacted media (ie., cap, sludge).

LFR Response: *Metals results have already been summarized in Table RI-2a, with sample locations, depths, concentrations, and impacted media indicated. Additionally, similar to Specific Comment #5 above, the comparison to 10 times the STLC was originally provided for comparison to determine whether additional testing for leaching potential was necessary. Since leaching potential has subsequently been evaluated, the referenced sentence has been deleted as it is no longer a relevant comparison.*

PCBs: PCBs were detected at concentrations ranging from 0.17 mg/kg to 48 mg/kg.

Indicate the sample location, depth, and impacted media for the PCB concentration of 48 mg/kg.

LFR Response: *LFR has revised the text to indicate the sample location, depth, and impacted media for the 48 mg/kg PCB concentration.*

Dioxins: Total 2,3,7,8-TCDD Equivalence (TEQ) was detected in the three samples analyzed at concentrations ranging from 72 ng/kg to 4,300 ng/kg.

Indicate the sample location, depth, and impacted media for the dioxin concentration of 4,300 ng/kg.

LFR Response: *LFR has revised the text to indicate the sample location, depth, and impacted media for the 4,300 ng/kg dioxin concentration.*

SVOCs and PAHs:

Indicate the sample location, depth, and impacted media for the highest concentration of each SVOC or PAH detected.

LFR Response: *LFR has revised the text to indicate the sample location, depth, and impacted media for the highest concentration of each SVOC or PAH.*

VOCs:

Indicate the sample location, depth, and impacted media for the highest concentration of each VOC detected.

LFR Response: *LFR has revised the text to indicate the sample location, depth, and impacted media for the highest concentration of each VOC detected.*

TPH-cc and TRPH: Detectable TPH concentrations ranged from 65 mg/kg to 5,400 mg/kg. Detectable TRPH concentrations ranged from 19,400 mg/kg to 51,600 mg/kg.

Indicate the sample location, depth, and impacted media for the TPH concentration of 5,400 mg/kg and TRPH of 51,600 mg/kg.

LFR Response: *LFR has revised the text to indicate the sample location, depth, and impacted media for the 5,400 mg/kg and 51,600 mg/kg TPH concentrations.*

8. Section 1.6.7.2, Geotechnical Evaluation Results, Page 29:

Figure FS-1 provides the depth of the recommended over-excavation.

It is hard to determine the over excavation depths in the Figure. Indicate the different depths with different colored contours. The RPA area does not appear to be excavated in this Figure. Indicate in this Figure or another Figure to show the over excavation contours of the RPA area.

LFR Response: *LFR has modified this figure to provide additional index contours to make this figure more understandable. In addition, the elevation contours have been added for the Soil Consolidation Areas, located beneath the RPA.*

9. Section 1.6.7.2, Methane, Pages 32 and 33:

Detected methane concentrations ranged from 970 ppmv to 62,000 ppmv.

Indicate the sample location and depth for the methane concentration of 62,000 ppmv.

LFR Response: *LFR has revised the text to indicate the sample location and depth for the methane concentration of 62,000 ppmv.*

As part of the comments received from the DTSC, further characterization of the Site is required. Below is a brief outline of this effort, with specific details to be provided in a work plan to the DTSC for approval:

Add another bullet item to evaluate the solubility of the Site's chemicals of concern.

LFR Response: *This scope did not further evaluate solubility. Subsequent DTSC requests added solubility as a concern for further evaluation, as described and estimated in Appendix J of the RI.*

10. Section 1.7.4, Site Hydrology, Page 35:

Figures FS-2a through FS-2f depict the geotechnical investigation's CPT data, which distinguished grain size and saturation.

The area of the road has a question mark (?) located at the first 10 feet bgs. Indicate whether any samples were collected and logged to determine whether the sludge material is located in this area.

LFR Response: *A trench (TR-24) and two sampling locations (52 and 102) were completed along the northern portion of the service road that transects the Site in the north-northeast and south-southwest direction. Results of the trenching and soil sampling did not indicate the presence of sludge material. Figures FS-2b and FS-2c have been revised accordingly.*

11. Section 1.8, nature and Extent of Affected Media, Page 37:

The following subsections discuss the totality of data collected to date throughout the Site.

For each subsection discussed, indicate the highest concentration of each COC and the associated sample location, depth for each media (ie., fill/cap, sludge, tank farm and other areas, and native).

LFR Response: *Section 1.8 has been revised to include the sample identifier, location, and material type for the maximum concentrations listed.*

12. Section 1.8.1.2, Metals, Page 39:

Barium, chromium, and lead were the only metals detected at concentrations above 10 times their respective STLCs.

Section 1.6.6.2 also indicates various other metals detected 10 times above their respective STLCs. Clarify these differences and revise the text as necessary.

LFR Response: *Similar to Specific Comment #5 above, the comparison to 10 times the STLC was originally provided for comparison to determine whether additional testing for leaching potential was necessary. Since leaching potential has subsequently been evaluated, the referenced sentence has been deleted as it is no longer a relevant comparison.*

13. Section 1.8.1.6, Polychlorinated Biphenyls, Page 43:

For screening purposes, six soil samples were analyzed for soluble PCB concentrations using the California WET test.

Wherever the California WET test is mentioned, it should be identified as a modified method. Revise the text as necessary.

LFR Response: *The text has been modified to reflect that the results of the California WET test (reported within Section 1.8.1.6) reflect the modified method (using deionized water).*

14. Section 1.11.1, Carcinogenic Risks, Page 53:

In Section 1.11 on page 52, chlordane is listed as a COPC. However, COPCs or chlordane is not mentioned in any of the selected media to reduce the risk to acceptable levels. Indicate the rationale for not listing chlordane or COPCs or revise the text.

LFR Response: *Chlordane is listed as a COPC in Section 1.11 as it was detected in several samples (up to a maximum concentration of 0.23 mg/kg) in one layer of one area (e.g., fill/cap material in the northeast landfarm). Upon evaluation of this COPC in the risk assessment, the resulting risk was 3×10^{-6}, assuming that a complete exposure pathway exists. This area/layer (fill/cap of the northeast landfarm) has a total risk of 8×10^{-6}, suggesting that it is above, although close to, the de minimus level of 1×10^{-6}. Individual risk drivers were not listed for the two areas (northeast landfarm and tank farm and all other areas) that were only slightly above the de minimus risk of 1×10^{-6}.*

Soils from this layer are proposed for placement in the bottom of the SCA to prevent any direct exposure; additionally, these soils do not present a leaching threat and offer an additional buffer of protection, as they will be below sludge material.

15. Section 1.13.1, Soil and Sludge Media, Northeast Landfarm Fill/Cap Soils, Page 62:

The fill/cap soils in the Northeast Landfarm can be characterized by a layer that is estimated to be approximately 1 to 3 feet thick and, as the name implies, can be found as the uppermost layer of soils in this area. Based on aerial photographs, this material was imported to the Site after waste disposal activities had been stopped for the purpose of closing the Site through capping.

Indicate the source of the fill/cap material. If it is undocumented then it should be interpreted as site material used to cover the sludge material and not imported.

LFR Response: *LFR does not know the exact origin of the fill/cap material used to cover the more concentrated TPH sludge material. However, based upon our review of the analyses conducted to date, we postulate that this material was imported drilling fluids that were not affected by TPH. We base this interpretation on the fact that metal levels are similar (PCBs and dioxins are also significantly lower, but less pertinent to the origin issue as PCBs appear to have been introduced into one location, and are not indicative of all sludge of fill/cap material), and the only major difference appears to be TPH levels.*

16. Section 1.13.1, Southwest Landfarm Native Soils, Page 69:

The total carcinogenic risk (6.0 X 10-5) for this area is solely attributable to the VOC contamination risk for indoor air quality. Due to the anticipated excavation and manipulation of soils in this area to prescribed depths for geotechnical purposes, the limited VOC concentrations in the native soils of this area are not expected to have a significant risk associated with them.

There is a significant risk of 6.0 X 10^{-5} for this area. Indicate if excavation and manipulation are the only remedial efforts to be implemented to reduce the risk for this subject media.

LFR Response: *To further clarify the risk calculated for this area, the risk is being driven primarily by three VOC analytes, specifically, vinyl chloride, benzene, and TCE. Vinyl chloride and TCE were detected in only one of nine samples within this layer and area at a concentration not too far above the detection limit (e.g., 0.2 µg/l for vinyl chloride [detection limit for vinyl chloride is 0.1 µg/l) and 3.1 µg/l for TCE [detection limit for TCE is 1 µg/l]). Benzene was slightly more prevalent, but the maximum concentration was 11 µg/l. The resulting risk for these concentrations is a result of the sensitivity of the vapor intrusion model that assumes that a house is being built above this location. The risk would be significantly below de minimus levels if evaluated without a house above the location. The concentrations associated with the readings in this area are not suggestive of any type of source material that would warrant additional treatment. Furthermore, the associated mass with these low concentrations is very minimal, and any transport, due to the low mass, will not persist. Due to geotechnical requirements, native soils within this area will require over excavation and recompaction as an engineered fill. The soils in question have remained in their current configuration for approximately 30 years. In LFR's experience, simply disrupting the soil matrix and adding water will facilitate numerous aerobic attenuation processes which will diminish this relatively low concentration and low mass. The FS/RAP text has been modified to add clarity to this issue.*

17. Section 2.2.2, Remedial Design, Pages 75 and 76:

Toxic Substances Control Act (TSCA): A separate U.S. EPA submittal has been submitted, which will be in accordance with this RAP.

Provide a copy of the U.S. EPA submittal.

LFR Response: *This submittal is attached. It was crafted to emulate other EPA-approved plans for similar sites, and is currently under review by EPA.*

18. Section 2.2.3, Construction Implementation, Page 77:

An approved biologist must observe the construction to ensure protective procedures are implemented.

Indicate who will approve the biologist and submit the contact information of the approved biologist prior to remediation activities.

LFR Response: *See Specific Comment #2, above. Impact Sciences, Inc., or other monitor approved by the Department of Fish and Game, will be responsible for monitoring.*

19. Section 2.3, Remedial Action Objectives, Northeast and Southwest Landfarm Sludge Materials, Pages 80 and 81:

Consider the potential for SVOCs being present due to analytical limitations.

Indicate the RAO for potential present SVOCs.

LFR Response: *For the purposes of the RAOs, LFR is considering the potential that SVOCs may be present within the sludge materials; however, the site evidence to date is that material within the sludge materials, whether it be low levels of PCBs, SVOCs, etc., is not leaching out of the sludge, as evidenced by the lack of these analytes in the native materials beneath the sludge in its current location. Furthermore, none of the sludge materials will be in future residential areas, and they will remain in the soil consolidation area where they will continue to attenuate and degrade over time due to applied treatment as well as natural processes.*

20. Section 4.2.2.1, Soil-Vapor Extraction, Page 94:

Pilot testing of SVE at the North Shore Site would be necessary to provide design criteria, and to increase confidence in proper implementation.

In a RAP Addendum, submit the details of the pilot testing and indicate when the SVE system will be designed and placed.

LFR Response: *As we have discussed with the DTSC team, LFR agrees with your recommendation. Pilot testing would need to measure responses of the strata of sludge that currently does not exist. Given this, LFR will test the placed sludge material to evaluate if it*

poses a significant risk to water quality, and then, if the initial mechanical and biological treatment received did not effect sufficient reductions, the transmissivity and hydraulic characteristics will be evaluated to facilitate a responsible design. This will be done during the remedial process, in cooperation with the DTSC, in accordance with criteria and RAOs called out in the FS/RAP. As you request, we have clarified these issues in the RAP, specifically in Section 8.1.4, where subsequent RAP addendum issues are described and defined.

21. Section 4.3.1, Engineering Controls – Containment Technologies, Page 100:

The dewatering for geotechnical and grading purposes forces groundwater to be treated prior to discharge to the Mandalay Canal.

In the site area, given the proximity of the canal, and the saline nature of the groundwater and surface water, NPDES and WDR permits would be issued by the RWQCB.

Provide copies of the acquired permits prior to remediation activities.

LFR Response: *These permits are being applied for and no discharge will occur until these standard permits are granted by the RWQCB. LFR will provide copies to DTSC upon receiving RWQCB permit approval. The FS/RAP has been modified to reflect and document this requirement.*

Hydraulic pilot testing would be necessary at the North Shore Site, but otherwise has been shown to be a feasible technology.

Submit the details of the hydraulic pilot testing for evaluation.

LFR Response: *This effort will be submitted to DTSC in the early stages of the remedial action implementation, as described in Section 8.1.4. The FS/RAP has been modified to reflect this requirement.*

22. Section 5.1.3, Alternative 3-GWET with Air Stripping and Vapor-Phase Adsorption; Monitored Natural Attenuation; Hazardous Soil Excavation and Disposal; Affected Soil Excavation, Biotreatment, Consolidation and Stratification, In-Situ SVE/Aeration Treatment and Capping; Fencing with Deed Restrictions, Page 111:

Soils placed within 5 feet of groundwater would contain the lowest concentrations of chemicals of concern, and would be used as fill/cap material (no sludge material would be placed within the 5-foot zone).

Indicate the approximate thickness of the fill/cap material in the RPA to determine the distance the sludge material will be from the groundwater.

LFR Response: *The FS/RAP has been modified to provide this information (see Figure FS-1). Estimates of volumes and placement areas indicate that the thickness of the fill/cap material will be approximately 7 feet. In addition, Figure FS-10b provides definition of how the elevation of the bottom of the SCA excavation and bottom of the fill/cap material will be set; none of the materials will be placed in the saturated zone. The planned excavation will be approximately 1 to 3 feet above the observed groundwater depth. These observations will be compared to the tidal study information provided in Appendix FS-F for consideration of how tidal influences would be expected to alter the observed groundwater elevation. The intention is to not place fill/cap material in standing water, but to come reasonably close to groundwater. Again, due to the essential inert nature of the fill/cap material, these materials will provide an additional buffer between the sludge material and the groundwater.*

23. Section 5.3.3, Alternative 3, Page 118:

For the purpose of cost comparison, it is assumed that GWET would be performed for 1 year, and semiannual monitoring of selected wells at the site would continue for 5 years.

The post-remediation groundwater monitoring may be different than what is assumed for cost comparison.

LFR Response: *LFR understands this. No changes have been made to the document.*

24. Section 6.5.1, RAO Attainment, Pages 127 and 128:

Alternative 3 will consolidate treated affected soils within the Resource Protection Area (RPA) in two "Soil Containment Areas" (SCAs), which will have 3- to 6-foot thick soil caps that will effectively prevent erosion of affected soils and sludge.

Indicate the two SCAs on a Figure.

Sections b and e: 3-to 6-foot caps is not consistent with Section 5.3.1 that states protection of burrowing animals (none are projected to burrow deeper than 6 feet). Clarify the text.

Discussion of the RAO attainment for methane gas issues at the site should be addressed. Add to text.

LFR Response: *The two SCA areas are shown on Figure FS-5.*

We have modified the text to call out the 6-foot cap depth. We note that the North Shore Resource Protection Area/Milk-Vetch Preservation Plan specifies a 3- to 6-foot cap.

Figure FS-1 now shows both SCAs. Methane evaluations indicate that methane originates from the degradation of petroleum, not from discharges from petroleum geologic formations. With the consolidation in the SCAs, beneath a cap which released pressure, methane will no longer be in the vicinity of residential units. We have clarified these issues in the text.

25. Section 6.5.1, Northeast Landfarm Sludge Materials, Page 129:

l. Prevent the inhalation of VOCs posing excess cancer risk levels of 1 X 10-6, or a non-carcinogenic target HI of 1.0.

The RAO for VOCs posing excess risk levels of 1 X 10-6 for inhalation should be re-evaluated based on the area of its final placement. Revise text if necessary.

LFR Response: *We concur, and believe that the SCAs will both diminish any VOCs currently found in the sludge, and position the trace amounts that could remain in an area where exposure pathways will be essentially eliminated.*

m. VOC-affected soils will be excavated and consolidated within the SCAs near the surface, as cap material.

Site Sludge material has other compounds that will be present after SVE treatment and should not be used as cap material. Revise text.

LFR Response: *This text was intended for native VOC-affected soils. The FS/RAP has been modified accordingly. It should be reiterated that treated or untreated sludge materials will not be placed in future residential areas or as the cap of the SCA.*

26. Section 6.5.1, Southwest Landfarm Fill/Cap Soils, Southwest Landfarm Sludge Materials, Page 131:

v. Prevent the inhalation and threat to indoor air of benzene posing excess cancer risk levels exceeding the 1.0 X 10-6 cancer risk.

z. Prevent the inhalation and threat to indoor air quality posed by VOCs having an excess carcinogenic risk of 1.0 X 10^{-6}.

The RAO for VOCs posing excess risk levels of 1 X 10-6 for inhalation should be re-evaluated based on the area of its final placement. Revise text if necessary.

LFR Response: *These line items are listed here as they influence the overall risk in their current location. We recognize that these soils, for other reasons, will not be placed beneath residential areas, and therefore indoor air quality is not an issue for the ultimate placement of these soils.*

27. Section 6.5.1, Groundwater, Pages 132 and 133:

The following table presents each groundwater VOC and its California Primary MCL (RWQCB 2003).

The following compounds were detected in the groundwater during previous investigations at the site: Chloroethane, 1,2-dichloroethane, 1,1-dichloroethene, trans-1,2,-dichloroethene,

acetone, 2-butanone, and chloroform. Indicate the rationale for not including each compound in the table or revise the table.

LFR Response: *MCLs for 1,2-DCA, 1,1-DCE, and trans-1,2-DCE have been added to the table. The remaining compounds were not included in the table because they do not have established California Primary MCLs.*

28. Section 6.5.2, Remedial Action Goals, Page 134:

Methylene chloride was detected in soil samples in previous investigations at the site. Indicate the rationale for not including it in the table or revise the table.

LFR Response: *While methylene chloride was detected in several soil samples collected by others in the early and mid-1990s (Canonie in 1991 and ESE in 1996), none of the soil samples since during recent sampling investigations (2003-present) have identified the presence of methylene chloride. Furthermore, methylene chloride was detected in only 1 soil vapor sample (out of 100) collected throughout the Site at a concentration of 14 µg/l. Due to the very low frequency of detection (1%), methylene chloride was not identified as a chemical of concern; therefore, a remedial action goal was not included in Section 6.5.2. In the event that methylene chloride is identified during the course of field characterization activities, the residential and industrial target goals will be 9.1 mg/kg and 21 mg/kg, respectively.*

29. Section 7.2, Remedial Strategy, Page 140:

In the event that clean stockpiled soils need to be stored on top of affected materials, they shall be placed on a suitable plastic liner until removed.

Clean soil should not be stockpiled with affected materials. Revise the text.

LFR Response: *Clean soil will not be stockpiled directly with stockpiled affected materials. However, based on clarification discussions with Joe Sevrean, while the current soil movement plan does not call for the stockpiling of clean materials in areas of the Site where affected materials reside, in the event that interim storage space concerns arise during the course of the movements, clean materials may be store over affected materials, assuming that the following conditions are met:*

- *the affected materials are unexcavated materials (e.g., yet undisturbed portions of the Site)*
- *the affected materials have been overlaid with visquene or suitable plastic liner to prevent any mixing of the clean soil with the affected materials*

In the event that it rains during the project, indicate control measures that will be used to prevent impacted soil from migrating to clean soil.

LFR Response: *The Soil Movement Plan contained in the FS/RAP minimizes this potential concern by creating the SCAs by digging depressions that will contain and infiltrate any waters that come into contact with affected fill/cap and sludge material. Similarly, the excavations of fill/cap and sludge will also create a depression in which any rain water or eroded materials would collect. As these materials are not solubilized, as long as erosion is controlled, as indicated above, this concern is minimized. Furthermore, an Erosion Control Plan will be included as RAP Addenda.*

30. Section 7.3, Media: VOC-Affected Native Soils, Data Gaps, Page 141:

    The air stream from the SVE will be treated with adsorption processes before being discharged in accordance with an APCD permit.

    Provide copies of all APCD permits prior to remedial activities.

    LFR Response: *Copies of the APCD permits will be provided to DTSC upon receipt.*

    Soils will be screened every 10 feet vertically, or until negligible concentrations of VOCs in soil vapor are detected.

    Indicate the approximate thickness of the impacted native soils that will be screened for VOCs in this area and based on the thickness, the vertically screened soils should be implemented. Vertically screening every five feet may be recommended depending on the thickness.

    LFR Response: *The approximate thickness of the impacted native soils that will undergo screening for VOCs is approximately 13 to 15 feet. Native materials were observed approximately 12 to 14 feet below current ground surface. Depth to groundwater in this area is approximately 27 feet. Based on the conceptual model that the VOCs were historically released during disposal operations and leached down to the native materials, it is suggested that a source is not likely present at depth if it is not identified in the upper portion of native materials. This is supported by the soil vapor data that suggest widespread detections at a depth of 15 feet below current ground surface. There are instances where deeper detects are present, but always below readings detected at 15 feet. Therefore, vertical screening at narrower intervals is only deemed necessary in and around potential source areas identified at 15 feet below current ground surface.*

31. Section 7.4.1, Groundwater Extraction and Treatment, Data Gap Sampling and Analysis, Page 144:

    In accordance with the data gaps described in Section 7.4, temporary wells to measure both water quality and pressure gradients will be installed, along with wells to be used to conduct a 24- to 48-hour pump test to define aquifer parameters for a detailed extraction system design.

    An estimated 15 additional Hydropunch borings will be advanced at locations across the Site.

Since HP-01 is in the impacted plume, delineation of this area should include a Hydropunch to the west or close by to the northwest of HP-01.

LFR Response: *LFR made a graphical error in the presentation of the proposed hydropunch locations that will eventually be converted into temporary groundwater monitoring wells. A proposed hydropunch location is situated north-northwest of HP-01. Figure FS-4 has been revised accordingly.*

There are no proposed Hydropunch or temporary wells proposed in the southeast corner of the site in the proposed RPA. The current water quality is unknown for this area and future monitoring of this area might be recommended since the contaminated soils will be placed in this area. It would be good to have groundwater data in this area. Revise Figure 4 or indicate the rational for not having current groundwater information for this area of the site.

LFR Response: *Figure FS-4 has been revised to include a proposed hydropunch location, which will be converted into temporary groundwater monitoring well, on the southeast corner of the Site in the proposed RPA.*

32. Sections 7.4.1, Groundwater Extraction and Treatment, Data Gap Sampling and Analysis, and Section 7.4.2, Groundwater Extraction Well Installation, Pages 144 and 145:

The temporary wells will be constructed of 2-inch-diameter PVC casing with 0.01-inch slotted PVC screens placed across the water table and approximately 10 feet and 5 feet of screen extending below and above the water table, respectively.

The pump test well will be constructed of 6-inch-diameter PVC casing with 0.01-inch slotted PVC screens placed across the water table and approximately 15 to 20 feet of screen extending below the water table.

The observation wells will be constructed of 2-inch-diameter PVC casing with 0.01-inch slotted PVC screens placed across the water table and approximately 10 feet and 5 feet of screen extending below and above the water table, respectively.

Based on preliminary estimates, we estimate that 13 groundwater extraction wells will be installed, to an average depth of 45 feet bgs. The extraction wells will be installed so that the screened portion of the well extends from approximately 15 feet into the shallow groundwater zone to slightly above the water table.

Indicate the rationale for the various well depths and screen depths for the above mentioned groundwater wells.

LFR Response: *The well and screen depths of the proposed groundwater monitoring and extraction wells are based in accordance with common industry-standard practice for*

groundwater monitoring and extraction well constructions. The actual well depths and screen depths will be determined based discussions/approval of DTSC and field conditions encountered at the time of installation.

33. Section 7.4.2, Groundwater Extraction Well Installation, Page 145:

    Groundwater monitoring will be conducted periodically during active remediation to monitor remedial progress and to evaluate long-term effectiveness of the selected remedial alternative following termination of active site remediation.

    Indicate the length of the monitoring intervals and indicate the parameters that will be evaluated.

    LFR Response: *Monitoring will be conducted before remedial and dewatering activities are undertaken, in conjunction with the groundwater evaluation described in the FS/RAP. Monitoring of the groundwater will be made on the effluent as part of any dewatering and pumping activity. VOCs will be the constituents measured, as no other contaminants of concern have been identified in groundwater. Once the groundwater evaluation effort has been completed, and the design of the remedial and dewatering efforts has been integrated, the monitoring of groundwater quality and behavior will be included in this design. As DTSC has requested, this design will be submitted to DTSC for approval. The FS/RAP text has been modified to reflect this.*

34. Section 7.5.2, Sludge Excavation and Biological Treatment – Soil Movements 5, 6 11, and 16, Page 151:

    Sludge containing low concentrations of TPH contaminants to be placed in the soil consolidation area will be treated biologically in conjunction with final placement.

    Submit the details of the products to be used and the details of the biotreatment placement on the sludge materials. Indicate how the sludge with high TPH concentrations will be managed.

    LFR Response: *The text has been modified to reflect that soil will be manipulated with nutrients added in-place, and that the excavation techniques being employed inherently minimize any localized high TPH concentrations. Both these methodologies will maximize biological aerobic degradation, and minimize high TPH concentrations. We will include an evaluation of this concern in the scheduled soil evaluation and pilot testing planned in response to comment 20 above. Section 8.1.4 includes a description of the addendum which will include this evaluation.*

35. Section 7.5.2, VOC-Affected Soil – Soil Movement 7, Pages 151 and 152:

    To address these soils, suspect source soils (those with greater than 1 ppm of VOC vapor), which are believed to have been affected by the original seepage from ponds with higher VOC

content, will be segregated from soils with "trace" concentrations (greater than 1 ppm VOC vapor).

Trace concentrations and suspect source soils are both referenced as greater than 1 ppm VOC vapor. Clarify the text.

LFR Response: *The text has been clarified as suggested.*

Trace-concentration soils will be excavated and deposited into the SCAs for use as cap material.

It is assumed that the VOC-affected soil is the native soil below the sludge but it is not clear in the text. Clarify the text.

LFR Response: *Your assumption is accurate, and the text has been modified to add clarity.*

Indicate the approximate depth to groundwater from the surface of the VOC-affected soil.

LFR Response: *Based on the VOC data collected within the delineated VOC-affected soil, VOCs were detected in the native materials at approximately 15 feet bgs, particularly in the SG-36 location. Based on the re-interpreted groundwater elevation and flow direction for the most recent groundwater monitoring event (2nd Quarter 2004), the depth to groundwater beneath the delineated VOC-affected soil was approximately 20 to 25 feet below the surface of the VOC-affected soil.*

Three purge volumes should be extracted prior to collecting a sample for the PID or summa canister since three purge volumes were used in previous soil gas investigations.

LFR Response: LFR has revised the text to indicate the required three purge volumes prior to collecting a sample for analysis. (Please note that, based on the above responses, the text in this section has also been modified to reflect additional screening methods.)

Indicate if the MINRAE will be directly reading from the probe.

LFR Response: *The text has been modified to indicate that the MiniRae will be directly reading from the probe.*

It is not recommended to collect Summa canister samples from 2.5 bgs due to the high probability of ambient air intrusion. The preferable depth would be 5 feet bgs for sample collection with a summa canister, but water or moisture from groundwater should also be a factor in determining probe placement since water should not be within the soil gas sample. An alternative would be to use another type of sample container.

LFR Response: *Samples from the 2.5-foot depth will be used to evaluate the nature of gas detected in the Minirae samples, as these will also be gathered from a shallower depth. Also,*

the soil gas samples will be take relatively shortly following the removal of sludge, so we would not anticipate dissipation of these soil gases within the days or weeks (at most) before the samples are collected and analyses are run. As discussed with the DTSC, a number of tools will be used to identify the source soils at the Site (as described in Section 8.4.1), and LFR will be in close communication with DTSC to evaluate which methods prove most effective. Soil samples will be the final decision criteria for the disposition of the soils, and soil gas is intended for cost-effective and timely results to select appropriate sample locations.

36. Section 7.5.2, Site Preparation, Page 153:

A detailed erosion control plan will be compiled and permits from Ventura County and RWQCB obtained by the grading contractor.

Submit the erosion control plan as part of the RAP addendum and submit all permits prior to remediation activities.

LFR Response: *All APCD permits and the erosion control plan will be submitted prior to remediation activities. Section 8.1.4 of the RAP has been modified to cite this.*

As appropriate, a berm will be constructed along the perimeter of the Site at locations where storm water could potentially flow off site.

Indicate what will be used for the mentioned berm.

LFR Response: *Native or non-affected materials will be used for the berm. The text has been clarified to reflect this.*

37. Section 7.5.2, Vapor and Dust Control, Page 154:

The Site will be controlled and no excavation will be conducted in times of high wind conditions, greater than 25 miles per hour.

Gusts of wind of 25 mph exceeding fifteen minutes will require excavation activities to cease until the wind subsides. Revise the text.

LFR Response: *The text has been revised to state that gusts of wind of 25 mph exceeding fifteen minutes will require excavation activities to cease until the wind subsides.*

38. Section 7.5.2, Utility Clearance, Page 154:

Identification of utilities in and around the excavation areas will be performed at least 48 hours before excavation begins.

Since the site is large, allow more than 48 hours for the identification of utilities.

LFR Response: *The text has been revised to indicate that identification of utilities in and around the excavation areas will be performed at least one week before excavation activities begin.*

39. Section 7.5.2, Sludge, Fill/Cap, VOC-Affected Soil, and Clean Soil Excavation and Movement Plan, Page 155:

    Area 1 clean soils will be excavated to within 2 feet above groundwater, and transported for stockpiling to Area 2, the only substantial area for initial stockpiling of clean soil.

    Cap/Fill material from both onsite land farms are proposed to be placed two feet above groundwater. Indicate the tidal influence of groundwater fluctuation in Area 1 and indicate the potential of contaminants from the Cap/Fill material to migrate to groundwater after placement in this area.

    LFR Response: *Appendix J to the RI evaluated this concern in detail, and found the there is no significant risk to groundwater from the fill/cap material. The text has been modified to address these concerns and clarify the basis.*

    The estimated volume of this soil movement is 165,000 cy, intended to be large enough to accommodate the fill/cap and sludge from Areas 4 and 5.

    Table FS-5 indicates a volume of 315,000 cy for soil movement 1. Clarify the text or modify the table.

    LFR Response: *The text was in error, and has been modified.*

40. Section 8.0, Remedial Action Implementation, Page 157:

    DTSC would like status reports regarding the progress of the project. Indicate how often the status reports will be submitted.

    LFR Response: *LFR will provide weekly summaries of activities and submit more detailed monthly status reports. Section 8.1.4 has been modified to describe this.*

41. Section 8.4.1, Interim Sampling, Pages 162 and 163:

    Native soils within RPA – To provide additional confirmation that these soils are clean, obtain a PID reading every third load of soils being removed (identified as those soils within the tank farm and other areas).

    Obtain a PID reading for every load of soils being removed.

    LFR Response: *LFR has revised the text accordingly.*

Hazardous PCB-affected sludge – In summary, the plan indicates that excavation bottom and sidewalls will be field screened with immunoassay test kits to ensure that elevated (above hazardous criteria) concentrations of PCBs have been removed.

Indicate manufacturer of immunoassay kits and associated detection limits.

LFR Response: *LFR is currently in the process of selecting the manufacturer of the immunoassay kits, with numerous options having been reviewed by EPA. EPA requires that all methodologies be TSCA approved, and the TSCA approval is expected within the month. Section 8.1.4 has also listed this approval to be forwarded to DTSC before this EPA regulated action is implemented.*

Indicate whether kits will be used for field analysis or sent to laboratory for analysis.

LFR Response: *The immunoassay kits would be used for field analysis to determine which soils would be segregated for disposal. A minimum of 10% of the samples will be collected and sent into the analytical laboratory for confirmation. Upon removal of PCB-affected soils greater than 50 mg/kg, confirmation sampling would consist of submitting soil samples to the laboratory for analytical testing.*

Submit a confirmation sample location figure for this area.

LFR Response: *The confirmation sampling figure is included in the TSCA submittal (Appendix FS-A).*

Indicate PCB cleanup goals for this area required by TSCA criteria.

LFR Response: *The cleanup goal for TSCA-affected soils is 50 mg/kg. Once confirmation samples indicate that the excavation soils are below 50 mg/kg, the PCB concentrations are no longer considered to be hazardous and TSCA cleanup is no longer applicable. The surrounding sludge materials will be further remediated in accordance with the RAP activities described herein to the cleanup goals described herein.*

42. Section 8.4.2, Confirmation Sampling, Page 164:

Sludge: Four discrete samples will be composited and submitted for PCBs by EPA Method 8082 and barium by EPA method 6010.

Submit every fifth composite sample submitted for additional analyses of PAHs by EPA Method 8310.

Add the PAH analyses to the composite of PCBs and barium.

LFR Response: *The sampling density for PCBs and barium is higher than that for other compounds, as these two substances have been identified as the primary indicator chemicals within the fill/cap and sludge materials. These materials appear widespread throughout*

fill/cap and sludge materials (albeit at different concentrations between the two layers) and provide strong support, when absent, that affected materials are not present. In all of the sampling conducted to date at the Site, PAHs have not been identified in materials when barium and PAH were not present, suggesting that if confirmation sampling results for PCBs and barium suggest that the material is not affected, the same soil is not expected to be affected by PAHs either. To some extent, the RI samples of native materials provide the first layer of confirmation sampling for PAHs. The proposed confirmation sampling schedule for PAHs (upon removal of the sludge layer) provides additional confirmation that PAHs are not present in the native soils. Per subsequent discussions with Mr. Joe Sevrean of DTSC, the PAH sampling frequency will be modified to "submit every fourth" composite sample for PAH analysis by EPA Method 8310.

43. Section 8.4.3, Fill Material Sampling, Pages 165 and 166:

PCBs by EPA Method 8280

Correct the typo to 8082.

LFR Response: *The text has been revised accordingly.*

For every fifth acre, collect an additional sample at a depth of 8 feet bgs and submit sample for the above suite of analyses.

Based on discussions during a meeting on September 22, 2005, it was agreed to change this sample depth to 10 feet bgs. Revise text.

LFR Response: *The text has been revised as agreed.*

Submit soil vapor samples for analysis of VOCs by EPA Method 8260.

Add methane analysis to the soil vapor samples.

LFR Response: *The text has been revised accordingly to include one methane analysis for every fourth grid.*

44. Section 8.4.4, SCA Confirmation Sampling, Page 166:

Additionally, every fifth sample will be submitted for analyses of EPA Method 8082 for PCBs and EPA Method 6010B for barium.

Add 8310 for PAHs to this suite of analyses.

LFR Response: *The text has been revised accordingly.*

Submit dioxin sampling protocol for the SCA cap materials.

LFR Response: *The material that will be used for the cap material of the SCA will be native soils within northeastern landfarm area that may have contained trace levels of VOCs or treated VOC soils from this same location. To document that sludge materials are not being used in the cap in this area, additional samples are being submitted for analysis of the primary indicator chemicals, specifically, barium and PCBs as well as PAHs. Because dioxins have not previously been found in any of the deep native samples tested, and the presence of dioxin has been generally associated with the presence of PCBs, dioxin sampling will only be conducted if the results of EPA Method 8082 exceed the residential PRG of 0.22 mg/kg. If no samples contain PCB concentrations above the residential PRG, three existing cap samples will be randomly selected for analysis of dioxins by EPA Method 8290 to confirm that dioxins are not a chemical of concern within the SCA cap.*

45. Section 8.6, other Quality Control Requirements, Page 168:

Method Blank – The mobile laboratory will use a syringe to collect a background air sample as a method blank for the VOC analysis.

For Method Blank protocols, the mobile lab should follow the "Advisory – Active Soil Gas Investigations" January 28, 2003, DTSC & LARWQCB. Revise text.

LFR Response: *The text has been revised accordingly.*

Data validation will ensure that all project analytical data are of reliable and comparable data quality.

Submit a QAPP or reference the QAPP that will be used for QA/QC guidelines for the field work, sampling, and sample analysis, and duplicate samples.

LFR Response: *A QAPP section has been added to the sampling protocols provided in Appendix FS-E.*

Data validation memorandums should be submitted as part of the data validation process.

LFR Response: *The text has been revised to include the submission of data validation memorandums.*

46. Section 8.7, Decontamination, Page 169:

All equipment or trucks that come into contact with potentially affected soil or water will be decontaminated before leaving the site.

Indicate how decontamination water will be managed.

LFR Response: *The handling of the decontamination water will be included in the Decontamination Plan to be prepared by the contractor selected and will be submitted in an*

addendum to the RAP. Section 8.1.4 has been modified to include this plan in accordance with DTSC comments and new criteria identified by LFR.

47. Table FS-5, Preliminary Soil Movement Plan:

    The column describing "To Sampling Regimen": Wherever it states PID every third load, change to every load.

    LFR Response: *The text has been revised accordingly.*

SUBJECT: DRAFT FEASIBILITY STUDY AND REMEDIAL ACTION PLAN, NORTH SHORE AT MANDALAY BAY, OXNARD, CALIFORNIA: APPENDIX B "AIR MONITORING PLAN"; PCA: 12050; Site Code: 301242; WP: 11 – authored by Fran Collier, M.S., Associate Toxicologist, Human and Ecological Risk Division, and Frank Parr, CIH, CSP, Senior Industrial Hygienist, Industrial Hygiene and Safety Branch, Human and Ecological Risk Division

HERD has reviewed this report with emphasis on those aspects that affect the risk to human health and the environment. HERD's review addressed issues concerning risk reduction from implementation of the recommended suite of remedial actions and assessment of potential post remedial risk to future residents as well as ecological receptors. Grammatical or typographical errors that do not affect the evaluation have not been noted.

General Comment:

HERD comments are presented in two sections. Both sets of comments pertain to perimeter or fenceline air monitoring to protect off-site residents and other receptors. Both Fran Collier and Frank Parr prepared these comments. The comments are identified by author.

Perimeter Air Monitoring (Fran Collier)

1. HERD recommends that the AMP describe the "non-work day" monitoring strategy.

    LFR Response: *Non-work day monitoring will be conducted if the results of work day monitoring indicate a potential issue with dust and/or VOC emissions. If work day monitoring does not identify exceedances of dust or VOC emissions, non-work day monitoring will not be deemed necessary.*

    At the end of each workday, an excavation unit will either be covered with plastic sheeting or sprayed with water containing an additive to "crust" the excavation to prevent disturbances. Because the excavation areas will be covered to prevent dust from leaving the Site, a monitoring strategy during the non-work day should not necessary (but will be monitored as identified above if work day monitoring suggests the potential for site emissions). If work periods have stopped at the Site for more than one week, a plan to revisit the Site weekly and

check the excavation covers will be made; if needed, additional coverage or "crusting" will be applied.

2. HERD recommends that the AMP estimate the amount of time remedial activities will be occurring.

   LFR Response: *Remedial activities are estimated to take between 12 and 14 months. The Air Monitoring Plan (AMP) has been modified accordingly.*

3. Section 2.0 "Background": This section appears to be material extracted from the main body of the FS/RAP text. As such HERD recommends that the AMP also address the FS/RAP comments as appropriate.

   LFR Response: *The AMP text has been revised to match relevant changes in the text of the FS/RAP.*

4. Section 2.0 "Background" Page 12: HERD recommends that the paragraph describing the general soils treatment processes be expanded to provide specific information about the technologies and that it describe how air monitoring will address potential emissions during excavation, stockpiling, treatment, and soils movement for final placement.

   LFR Response: *As suggested, a discussion of treatment technologies and how the air emissions will be controlled has been added.*

5. Section 4.2.1" Workday Trigger Level Process" Page 17: HERD recommends that the AMP describe what is meant by "continuous periodic analysis".

   LFR Response: *This section is discussing the daily monitoring of individual constituents. Filter samples will be set up to collect dust at the start of the workday, and the filters will be collected at the end of each workday and sent off to the laboratory. Therefore, the sampling is continuous (all day) and the analysis is periodic (daily).*

6. Section 4.2.2 "Workday Trigger Levels" Page18: HERD recommends that the AMP reference the source(s) of the proposed acute action levels that will be used if OEHHA chronic action levels are not available.

   LFR Response: *If the OEHHA chronic action levels are not available, the OEHHA acute action levels will be used; if neither is available, 10% of the PEL will be used.*

7. Section 4.2.2 "Workday Trigger Levels" Page18: HERD recommends that the AMP describe the rationale for selecting 10% of chronic action level or PEL as thresholds for action and provide references supporting the 10% level.

LFR Response: *The 10% of the PEL criteria is a conservative action level that has been presented by the USEPA in their Air Monitoring for Hazardous Materials course as an option to be considered when no other formal guidelines are available.*

8. Section 4.3.1.1 "Total VOCs" Page 19: Tier 1 levels For VOCs are proposed for 10 ppm above ambient levels. HERD recommends that the AMP provide a rationale for the 10 ppm and describe how this is health protective for off site residents. The proposed action is increased air monitoring. Describe how increased monitoring alone is protective of public health. Tier 2 level of 50 ppm above ambient levels should also be documented and described for protectiveness.

   LFR Response: *Based upon our reasonable worst-case soil vapor data scenario, the highest concentration of VOCs of concern would be 49 ppm at the soil surface in the excavation area. When this data was input into the RAE systems (PID Manufacturer) program, the VOCs were detectable using an 11.7 ev lamp. We have changed the plan to indicate using an 11.7 lamp, as it should have been in our original submittal. The RAE systems program yielded a correction factor, based upon relative response of 0.52. Therefore, a 10 ppm reading increase is really a 5.2 ppm increase, and the 50 ppm increase is really a 26 ppm increase. We feel that increases that would cause the trigger levels would be attributable to the heavy equipment exhaust or unusual off-site VOC migration to the Site, particularly from the adjacent roadway. This will be verified with additional monitoring including monitoring specifically for 1,2-DCA, vinyl chloride, and benzene. Both trigger levels will cause a modified excavation process to be implemented including use of additional water spray, and excavation technique modification up to and including work stoppage. It is reasonable to assume the trigger levels would occur first in the soil disturbance area. Personnel in the soil disturbance area will be in Level C respiratory protection. Due to dilution occurring both in the distance between the excavation areas and the perimeter and between the perimeter and the off-site residents, we do not anticipate a negative off-site exposure scenario. This will be documented by our perimeter sampling and monitoring.*

9. Section 4.3.2.2 "Metals" Page 21: This section provides a method for establishing action levels for dust based on the maximum concentration of barium at the site. HERD recommends that an incremental threshold of 50 $\mu g/m^3$ dust between upwind and downwind perimeter monitors be used as an action level to trigger further dust suppression measures during remediation.

   LFR Response: *We will incorporate this trigger into the plan with the addition of the monitoring measuring the PM10 fraction.*

   HERD recommends that LFR provide calculations showing that the acceptable health protective threshold concentration of COCs in fugitive dust is greater than the 50 $\mu g/m^3$ using the following equation and MRLs:

   - Action level for the chemical concentration in Air = (Total Dust Conc. in Air) X (Maximum Soil Conc.) X (CF)

- mg chemical/m^3 = (mgDust/m^3) X (mg Chemical/kg soil) X (1 kg soil/1E-06 mg soil)
- For example, if a site action level for PCBs is 0.0001 mg/m^3 based on the ATSDR Intermediate Oral MRL converted to an equivalent inhalation dose, and if the highest onsite PCB Concentration was 770 mg/kg; using the above equation:
- mg PCB/m^3 = (Y mg total dust/m^3) X (770 mg PCB/kg soil) X (1 kg soil / 1E-06 mg soil)
- Y mg dust/m^3 = 0.136 mg Total Dust/m^3
- 0.136 mg dust/m^3 is greater than the dust threshold of 50 μg/m^3 incremental fugative dust emission from the site. Therefore the 50 μg/m^3 total dust threshold is protective for the population downwind of the site.

***LFR Response**: The calculations have been added to Table 3 of the AMP.*

10. Section 5.1"Monitoring Locations and Frequency" Page 23: The AMP proposes one day of background sampling prior to initiating field activities. HERD recommends that the AMP discuss the rationale for doing only one day of sampling and that the AMP describe how many monitors and where they will be placed. HERD recommends that background monitoring occur daily for a full week to improve understanding of site specific meteorological conditions, dust generation and contaminant concentrations in fugitive dust at the site.

    ***LFR Response:** The AMP has been modified to increase the background monitoring to daily monitoring for a full week. Equipment will include the use of five monitors (the five that will be used during upcoming field activities). Three monitors will be placed upwind, and two monitors will be placed in downwind locations. Specific locations will be discussed with DTSC personnel if they are on-site during the background investigation. Based on the results for the initial days, it may be necessary to move locations on subsequent days.*

11. Section 5.2.2. "Time Integrated Sampling Equipment" Pages 24, 25 and 26: HERD recommends that perimeter air monitoring samples that are being collected for VOC, PCB, dioxin and metals use analysis methods with detection limits that are below health protective levels. HERD recommends that a table of analysis methods and detection limits be provided in the revised AMP.

    ***LFR Response:** The revised AMP provides a list of analysis methods and detection limits.*

12. Section 5.2.2.3 "Target PAHs" Page 25: The AMP proposes using personal pumps to collect air at flow rate of 0.5 to 1.0 liter/min. HERD recommends that LFR describe the rationale for the low flow rate and the different flow rates proposed for PAHs than for PCBs/Dioxins (1 and 2 liter/min).

LFR Response: *The PCB sampling flow rate will be 0.05-0.02 L/Min per NIOSH 5503 protocol. The flow rate for PAHs will be 2 L/Min per NIOSH 5506.*

Perimeter Air Monitoring (Frank Parr)

1. Page 15, Section 4.0, Protection of Worker Safety and Public Health: Text within this section indicates that airborne concentrations of over 10 indicator substances in the air at several locations in and outside of work areas will be measured. What are the 10 compounds? The number of indicator compounds listed here is not consistent with language contained in section 4.2.1 of the Air Monitoring Plan (AMP) which indicates 12 indicator compounds will be measured. Please reconcile for consistency.

   LFR Response: *The text has been clarified to indicate that 12 indicator chemicals will be monitored.*

2. Page 19, Section 4.3.1.1, Total VOCs: The total VOC action levels are problematic. The following issues associated with these action levels need to be addressed;

   a. Tier 1 action level is set at 10 ppm above ambient due to the low PELs for benzene, (1 ppm PEL, 5 ppm STEL) 1,2-DCA (1 ppm PEL, 4 ppm STEL) and vinyl chloride (1 ppm PEL). The Tier 1 action level would theoretically allow exposure above the PEL without exceeding the action level. The referenced section of the AMP indicates that if the Tier 1 action level is exceeded "air monitoring will be increased at the excavation area and at the perimeter of the Site" will occur.

   LFR Response: *We recognize that the action level for total VOCs is above the PEL/STELs of individual analytes. Obviously, the VOCs detected with the PID are a mixture of all VOCs and the exact contribution from each is not known. To assist in facilitating a correlation and ensuring that the action level of 10 ppm above ambient is protective, additional on-site real-time testing will be done by adding Draeger tube monitoring specifically for three VOC indicator chemicals (benzene, 1,2-DCA, and vinyl chloride) to the VOC field monitoring protocols. While working in the VOC-affected area, Draeger tube readings will be periodically tested (e.g., four per day initially or until a correlation is established for a particular area of the Site) to ensure that the associated total VOC readings do not exceed analyte thresholds for the indicator VOCs. If the on-site Draeger tube results suggest that individual VOC PELs are being exceeded, the total VOC action level will be modified. The correlation information will be discussed with DTSC personnel as it is collected.*

   In addition, at the Tier 1 trigger level, modification to the excavation process will be implemented. An immediate evaluation of the Site activities will be implemented, with particular focus on the nature and area of the soils excavation. Should materials being worked on have the potential to have caused the Tier 1 action level, additional monitoring of the soils will be implemented with engineering controls such as additional wetting, or potentially covering the soils in question with visquene or other material to minimize further emissions.

Please note that Table 2 of the AMP, submitted previously, contained an error for the level for total VOCs. This has been corrected in the revised AMP to match the level of 10 ppm and 50 ppm discussed in Section 4.3.1.1.

b. The Tier 2 action level is set at 50 ppm above ambient. In the event that the Tier 2 action level is exceeded, the referenced section of the AMP indicates that "the rate of the excavation will be reduced and the open face of the excavation will be sprayed with water to prevent off-site migration of dust". The Tier 2 action level would theoretically allow exposure above the PEL for benzene, carbon tetrachloride, 1,2-DCA, tetrachloroethene, trichloroethene, trimethylbenzene, and vinyl chloride in addition to exceeding several of these compounds STEL's without exceeding the action level. There does not appear to be any airborne VOC concentration which will prompt job shut down.

LFR Response: *The highest level of VOCs of concern based upon our reasonable worst-case soil vapor data scenario would be 49 ppm at the soil surface in the excavation area. When this data was input into the RAE systems (PID Manufacturer) program, the VOCs were detectable using an 11.7 ev lamp. We have changed the plan to indicate using an 11.7 lamp, as it should have been in our original submittal. The RAE systems program yielded a correction factor, based upon relative response, of 0.52. Therefore, a 10 ppm reading increase is really a 5.2 ppm increase, and the 50 ppm increase is really a 26 ppm increase. We feel that increases that would cause the trigger levels would be attributable to the heavy equipment exhaust or unusual off-site VOC migration to the Site, particularly from the adjacent roadway. This will be verified with additional monitoring including monitoring specifically for 1,2-DCA, vinyl chloride, and benzene. Both trigger levels will cause a modified excavation process to be implemented including use of additional water spray and excavation technique modification up to and including work stoppage. It is reasonable to assume the trigger levels would occur first in the soil disturbance area. Personnel in the soil disturbance area will be in Level C respiratory protection. Due to dilution occurring both in the distance between the excavation areas and the perimeter and between the perimeter and the off-site residents, we do not anticipate a negative off-site exposure scenario. This will be documented by our perimeter sampling and monitoring.*

c. The lamp voltage of the PID is not sufficient to ionize all of the volatile COC's listed (i.e. 1,2-DCA and carbon tetrachloride).

LFR Response: *The plan has been modified to indicate use of an 11.7ev lamp.*

d. Please clarify whether the PID relative response factor data was consulted in the development of the VOC action levels.

LFR Response: *Relative response factors were used in development of the VOC action levels.*

3. Page 20, Section 4.3.1.2., Individual VOCs: The IHSB recommends that "mini-cans" be used to collect air samples for subsequent analysis via EPA TO-15/OSHA 2120 method. Passive

samplers rely upon air movement associated with the wearer to provide an adequate diffusion rate. Consequently, these may not be ideally suited for placement at fixed monitoring locations. Additionally, the vinyl chloride action level must be revised. This appears to be an artifact from an incorrectly listed VC PEL listed in Table 2.

LFR Response: *The manufacturer's data for the passive samplers indicate accurate performance independent of wind velocity. The PEL for vinyl chloride has been corrected in the revised AMP.*

4. Page 20, Section 4.3.2.1, Total Dust: The Tier 1 level for total dust is set at 1 mg/m^3 above ambient. In the event that this level is exceeded the referenced section of the AMP indicates that "air monitoring will be increased at the excavation area and at the perimeter of the Site". The Tier 2 action level is set at 7.8 mg/m^3 above ambient. In the event that the Tier 2 action level is exceeded, the referenced section of the AMP indicates that "the rate of the excavation will be reduced and the open face of the excavation will be sprayed with water to prevent off-site migration of dust". Without implementing size separation, the 7.8 mg/m^3 total dust action level would exceed the 5 mg/m^3 respirable dust PEL for particulates not otherwise classified (PNOC). Additionally, the California Air Resources Board (CARB) has a 50 $\mu g/m^3$ 24-hour TWA for respirable particulate matter allowable threshold. Both Tier 1 and Tier 2 action levels exceed this value.

   LFR Response: *We will be monitoring for respirable particulates as well as total particulates, and will document compliance to these levels as they apply.*

5. Page 22, Section 5.1, Monitoring Locations and Frequency: Please describe how all monitoring and sampling devices will be deployed at breathing zone height (i.e., tripod, etc.).

   LFR Response: *Monitoring and sampling devises will be placed at heights of 4 to 5 feet on tripods or other fixed objects (e.g., fences).*

6. Page 25, Section 5.2.2.3, Target PAHs: Text within this section indicates that "Selected pesticide samples will be analyzed via NIOSH Method 7300". Are pesticides a COC? If so, why are they addressed within the PAH section. The referenced NIOSH method described within the PAH section in NIOSH 7300. NIOSH 7300 is utilized for the analysis of metals (elemental) via ICP-AES. The appropriate method for PAH analysis would be NIOSH 5506.

   LFR Response: *NIOSH 5506 will be used for PAH analysis.*

7. Page 26, Section 5.2.3, Meteorological Monitoring: Please provide wind rose data for the Site.

   LFR Response: *Wind rose data generated as part of the EIR and CDP processes has been added to the AMP (Attachment A). Wind rose data as generated from on-site monitoring will be submitted to the DTSC as part of the Monthly Status report which will include health and safety monitoring summary.*

8. Page 28, Section 7.0, Dust Control: Please describe provisions to control and mitigate "track-out" from Site vehicles.

LFR Response: *Track-out plates will be placed at the Site entrance/exit points. Additionally, a vehicle decon area will be in place to mitigate track-out as needed. These procedures will be submitted in accordance with the submittals called for in Section 8.1.4 of the FS/RAP.*

9. Table 2, Action Limits for Worker Safety and Community Perimeter Air Monitoring, Mandalay Bay Site, Oxnard, California: Please provide the correct Tier 1 and Tier 2 values for vinyl chloride .

LFR Response: *The vinyl chloride Tier 1 and Tier 2 values have been revised in the AMP.*

10. Table 2, Action Limits for Worker Safety and Community Perimeter Air Monitoring, Mandalay Bay Site, Oxnard, California: Please reconcile the listed COCs outlined in the referenced table with those identified in the site-specific HASP.

LFR Response: *The lists of COCs in the HSP and AMP have been reconciled.*

Conclusions and Recommendations:

1. HERD recommends that an incremental threshold of 50 $\mu g/m^3$ dust between upwind and downwind perimeter monitors be used as an action level to trigger further dust suppression measures during remediation.

LFR Response: *A dust threshold of 50 ug/m^3 measured as a PM10 fraction will be incorporated into the plan.*

2. HERD recommends that LFR prepare a revised draft FS/RAP Appendix B "Air Monitoring" that addresses the above comments.

LFR Response: *The AMP has been revised to address these comments.*

SUBJECT: DRAFT FEASIBILITY STUDY AND REMEDIAL ACTION PLAN, NORTH SHORE AT MANDALAY BAY, OXNARD, CALIFORNIA; PCA: 12050; Site Code: 301242; WP: 11 – authored by Fran Collier, M.S., Associate Toxicologist, Human and Ecological Risk Division

HERD has reviewed this report with emphasis on those aspects that affect the risk to human health and the environment. HERD's review addressed issues concerning risk reduction from implementation of the recommended suite of remedial actions and assessment of potential post remedial risk to future residents as well as ecological receptors. Grammatical or typographical errors that do not affect the evaluation have not been noted.

General Comment:

1. HERD cautions that the post remedial sampling and risk assessment may not be the last step. Depending on the sampling results and assessment of risk, additional sampling and/or remediation may be needed to demonstrate that health protective goals for the residential area and RPA cap material have been achieved.

   LFR Response: *LFR recognizes that post remedial sampling and risk assessment may not be the last step, and that additional sampling and/or remediation may be needed to demonstrate the health-protective goals for the residential area and SCA cap material have been achieved.*

Specific Comments:

1. Abbreviations and Acronyms: HERD recommends adding the definition of SCA. Describe how the SCA differs from the RPA.

   LFR Response: *SCA has been added to the abbreviations and acronyms. The SCA is the soil consolidation area which resides within the Resource Protection Area (RPA). For the purposes of this project, two SCAs exist within the RPA, one in the area of the former tank farm and near the milk vetch, the other on the northwestern portion of the Site. The full RPA includes the area of both SCAs and a connecting ribbon along the eastern site boundary.*

2. Section 1.11.1 "Carcinogenic Risks" Page 53: This section shows the total risk for the SWL as 6E-5; however this represents only the risk from the "native layer" as shown on Table 16A in the RIR. HERD recommends that the total risk be changed to 2E-3 to be consistent with Appendix G "Risk Assessment" of the RIR.

   LFR Response: *The total risk for the SWL has been changed to 2E-3.*

3. Section 1.11.5 "Total Petroleum Hydrocarbons" Page 58: This section states that TPH affected soils pose no threat and thus could be used anywhere on site providing that the soils fit into the overall remedial and development scheme. HERD recommends deleting this statement because TPH contaminated soils also contain other COPCs such as barium, PCBs, dioxins and may have PAHs in concentrations exceeding health protective levels because reasonable detection limits could not be achieved due to matrix interference from TPH concentrations.

   LFR Response: *This statement has been deleted, and the section modified to reflect the conversations between LFR and DTSC on this issue. The associated limitations and nature of the TPH RAO has been clarified.*

4. Section 3.1 and 3.2 PCBs, Dioxins and Furans (2,3,7,8-TCDD Equivalence): These sections discuss bioaccumulation of contaminants in plants. HERD recommends that language on bioavailability and bio-accumulation in these sections be made consistent to reflect that plant

and animal uptake of these contaminants can occur and that these contaminants bio-concentrate in the food chain.

LFR Response: *Although data showing soil-to-plant uptake is not significant (based on a review of the soil to dry plant uptake numbers provided in Table RI-7b), PCBs may be bioavailable. The potential for bioavailability will be minimized by placement of PCB-affected soils at depth (e.g., below ground surface), beneath a habitat with shallower root systems, and beneath a geotextile, within the SCA. We have added language regarding the potential bioavailability to the FS/RAP.*

5. Section 5.3.1 Alternative 1 "No Action" Page 115: In order to support the assertion that this alternative is not protective, HERD recommends that a statement be added to the subsection "Overall Protection of Human Health and the Environment" that states that current conditions pose an unacceptable risk to human health and the environment in all layers and areas of the site.

   LFR Response: *A statement to Alternative 1 - No Action has been made as suggested above with the added exception that it will say "in the majority of the Site" (as opposed to all layers and areas).*

6. Section 6.5.1 "RAO Attainment" Page 127: This section states that contaminants in soil will be rendered essentially immobile except by erosion, because they are essentially insoluble. HERD recommends that this section discuss erosion control on the area adjacent to the canal that is not proposed for excavation. Supplemental sampling that was completed at the end of August after the draft FS/RAP was prepared. The samples collected in the areas adjacent to the canal, showed high levels of barium and detected traces of TPH consistent with the concentrations of barium and TPH in the fill/cap material found on the rest of the site. Also, we are awaiting results of leachability studies to evaluate the solubility of materials.

   LFR Response: *LFR acknowledges that the fill/cap material extent is not precisely defined, and that a pre-soil movement sampling effort, using barium as the screening chemical, has been proposed and included conceptually in the FS/RAP. The precise sampling locations will be submitted for DTSC approval as part of a FS/RAP addendum prior to its implementation. Section 8.1.4 of the FS/RAP has been modified to reflect this.*

7. Section 6.5.1 "RAO Attainment" Page 129: This section proposes to use a soil matrix VOC concentration of 1 ppm total VOCs as criteria for using treated soils as cap material. The September 22 call LFR clarified that none of the soils from area 8 as defined by non-detects in laboratory would be used in the residential areas. Native soils and cap material as well as the sludge material would be placed in the RPA areas. HERD recommends that the "non detect" levels be based on health based criteria for each constituent such that the cumulative risk is less than 1E-06. HERD also recommends that the RPA cap material be evaluated for potential ecological risks.

   LFR Response: *Review of the available data and analysis of risk reveals the following:*

- *Concentrations above ND generally yield risks above 1E-06 for indoor air quality per the Johnson Ettinger model.*

- *Essentially, all soils above ND have been bounded by the estimated boundary depicted as soil area 8, or the odd shape beneath the NE Land Farm. For all intents and purposes, this boundary, to be clarified by the proposed additional sampling, represents the 1E-06 risk.*

- *As a practical measure, technologies to address most all observed levels below a total VOC concentration of 1 ppm are limited to barriers beneath buildings. This technology was found to be of limited value due to the DTSC Sensitive Use Memorandum, and not other technology that excavation was identified to address these soils.*

- *Only one soil vapor sample, SG-36-15, had concentrations above a total of 1 ppm. We interpret this sample, and other similar soils yet to be found, to represent "source" soils, and these will be excavated and treated in an ex-situ SVE process. The 1 ppm total VOC level is an engineering practicality and is not based on risk levels. No significant risk exists for these soils, except from indoor air quality. The mass of VOCs is small, and will not pose a significant risk to receptors, except from an indoor air quality perspective.*

  LFR will conduct the additional sampling and analysis of soil gas as proposed, and will work with the DTSC to treat concentrations of soils that are practicable, and as required to minimize health concerns. We will also sample the final concentration found in the RPA cap as specified in this RAP so that a risk evaluation can be conducted on the RPA. This has been clarified in the RAP.

8. Section 6.5.2 "Remedial Action Goals" Page 133 and 134: HERD recommends that the text describe and that the RAO table be footnoted to identify the meaning and use of "SCA Area Hazardous levels". Are these levels the proposed maximum concentration of contaminants in soil that can go into the area? What happens to soils that exceed these goals?

   LFR Response: *LFR has amended this table to refer to the SCA Area Target Levels. Soils above these levels have either not been identified or are being exported. Should levels that exceed these goals be identified, an evaluation as to whether the remedial action would prove protective and acceptable would need to be undertaken.*

9. Section 6.5.2 "Remedial Action Goals" Page 134: The draft FS/RAP proposes using the MADEP Method 1 cleanup standards for ground water protection category GW1 and Soils Concentration Strategy S-3. Instead, HERD recommends calculating acceptable risk based thresholds for residential areas using the MADEP assessment method and California toxicity criteria for the TPH categories. Based on discussions during the conference call on September 22, HERD concurs with LFR's proposal to drop the TPH RAGs for the residential areas because only clean native soils will be placed in the residential areas. Instead LFR

proposes analyze all stockpile and confirmation samples in residential soil areas for specific TPH constituents rather than the MADEP TPH categories.

LFR Response: *True as stated. The text has been modified to reflect this. In addition, the RAOs for TPH in the SCA have been clarified in this section, in accordance with telephone discussions with DTSC.*

10. Section 6.5.2 "Remedial Action Goals" Page 134: HERD recommends that the PCB residential target criteria be 0.22 for total PCBs, not for each Aroclor formulation. HERD recommends that PAH criteria also be included in the table.

    LFR Response: *The residential target criteria will be 0.22 µg/kg for total PCBs. Additionally, PAH criteria (including benzo(a)pyrene, benzo(a)anthracene, chrysene, and naphthalene) are already provided.*

11. Section 7.1, 7.2, 7.3, 7.4: These sections discuss the COPCs found in each area and layer. These sections qualitatively assert that COPCs are generally low in concentration and near PRG levels for both soils and VOCs provided that the indoor air path way isn't considered. The HRA shows significant risk in all areas and all levels, except for the native soil layer in the SWL and the TF&O Area. HERD recommends that the text be revised to present the quantitative information about the potential risk from exposure to these materials.

    LFR Response: *Sections 7.1 through 7.4 have been modified to include the quantitative information about the potential risk from exposure to these materials.*

12. Section 8.9 "Post Remediation Risk Assessment" Page 170: This section proposes using exposure units of 20 acres or less. HERD recommends that LFR propose specific exposure areas based on proposed development plans prior to conducting the risk assessment.

    LFR Response: *The text has been modified to indicate that LFR will propose specific exposure areas based on proposed development plans with DTSC prior to conducting the risk assessment.*

13. Section 8.9 "Post-Remediation Risk Assessment" Page 171: The FSRAP proposes to use an outdoor inhalation factor of 0.33 (8 hrs per day) and indoor factor of 0.69 (16 hours per day). HERD recommends that standard default parameters be used and that the Uncertainty section of the risk assessment discuss that proportionate times actually spent out doors and indoors.

    LFR Response: *The text has been modified accordingly.*

14. Section 8.9.2 "Potential Receptors" Page 172: States that no receptor populations will be in the RPA. HERD recommends using post-remediation concentration results from the cap areas to evaluate ecological risk to biota that may reside, forage or use the RPA areas based on the plant communities proposed for establishment in the RPA areas. Because location and extent

of the RPAs has changed, HERD recommends that the eco risk also provide maps and descriptions of the community plant associations to be planted and the potential animals that could use the RPA areas. In the September 22 call LFR added that the RPA zone adjacent to the canal will be developed as a bio-swale to treat storm water run-off. HERD recommends that the bio-swale also be included in the ecological risk assessment.

LFR Response: *The analytical results of sampling of SCA cap material upon completion of the SCA are will be evaluated from an ecological risk perspective. Additionally, maps and descriptions of the SCA will be presented. While it is not anticipated that treated native soils will be placed within the non-SCA portions of the RPA, an ecological receptor population will be evaluated similar to those being evaluated in the SCA areas if treated native soils are placed within the RPA outside of the SCA areas. It should be reiterated that no fill/cap or sludge materials will be placed in the cap materials within the SCA or RPA. The text has been modified to provide this clarification.*

15. Section 8.9.4 "Exposure Scenarios" Page 172 First bullet: HERD recommends that the phrase "averaged over a 70 year life time" be added to the text.

    LFR Response: *The text has been modified accordingly.*

16. Section 8.9.4 "Exposure Scenarios" Page 172 Fourth bullet: HERD recommends that skin surface area of 5,700 cm^2 be used for adults and 2,900 cm^2 be used for children.

    LFR Response: *The skin surface area parameter has been modified accordingly.*

17. Section 8.9.4 "Exposure Scenarios" Page 172 Fifth bullet: HERD recommends that the adult soil adherence factor of 0.07 mg/cm^2 and the child soil adherence factor of 0.2 mg/cm^2 be used.

    LFR Response: *The adherence factor parameter has been modified accordingly.*

18. Section 8.9.4 "Exposure Scenarios" Page 172 Sixth bullet: HERD recommends that the exposure frequency of 1 event per day be used for both children and adults.

    LFR Response: *The text has been modified accordingly.*

19. Section 8.9.4 page 173 proposes using the PEA equations. HERD recommends using the most current equations and exposure factors to evaluate potential risk and hazard from exposure to COPCs found at the site. The PEA equations are intended for a screening level risk appraisal and this site is beyond the screening phase.

    LFR Response: *LFR will use the standard equations and exposure factors.*

20. Section 8.9.5 "Selection of COPCs" page 174: This section proposes to eliminate chemicals that detected in less than 5 per cent of the samples at the site. Because the exposure unit is the typical lot rather than the entire site, HERD recommends that all chemicals of concern that are detected be considered in the evaluation. Any COPCs that are proposed for elimination should be clearly identified and the rationale for not including them should be clearly discussed.

    LFR Response: *The text was modified to say that all detected analytes will be initially considered. Any COPCs that are proposed for elimination will be clearly identified and the rationale for not including them will be clearly discussed.*

Conclusions and Recommendations:

1. HERD cautions that the post remedial sampling and risk assessment may not be the last step. Depending on the sampling results and assessment of risk, additional sampling and/or remediation may be needed to demonstrate that health protective goals for the residential area and that the environmental protection goals for the RPA cap material have been achieved.

    LFR Response: *Noted.*

2. HERD recommends that LFR prepare a revised draft FS/RAP that addresses the above comments.

    LFR Response: *A revised draft FS/RAP has been prepared to address all the comments contained within this letter.*

SUBJECT: MANDALAY BAY, HEALTH AND SAFETY PLAN FOR REMEDIAL ACTION IMPLEMENTATION; PCA Code: 24010, Site Number: 400443-50-43 – authored by Frank S. Parr, CIH, CSP, Senior Industrial Hygienist, Human and Ecological Risk Division (HERD), Industrial Hygiene and Safety Branch (IHSB)

General Comments:

1. The Department of Toxic Substances Control (DTSC) has reviewed the HASP for conformance with Title 8, California Code of Regulations (8 CCR), section 5192: "Health and Safety for Hazardous Waste Operations and Emergency Response". The requirements of 40 CFR, 22 CCR, the California Health and Safety Code, as well as DTSC Policies and Procedures are also considered in the DTSC review. Please note that in addition to the requirements of these citations, the employer is responsible for the implementation of an effective Illness and Injury Prevention program which is required by the 8 CCR, sections 1509 and 3203. The requirements of those sections have not been included in this review.

    LFR Response: *Comment noted.*

2. The DTSC is unable to foresee all the health and safety hazards in the work-place by the review of the submitted plan. Continuous surveillance of the work-site and creation of an effective health and safety program by the employer will reduce work place injuries and reduce liability.

LFR Response: *Comment noted.*

3. An industrial hygienist from the IHSB may perform a field audit in order to confirm the implementation of the HASP. The review of this HASP is not a guarantee that it will be properly and safely implemented. HASP implementation is the employer's responsibility.

LFR Response: *Comment noted.*

Specific Comments (Health and Safety Plan):

1. Page 1, Section 1.0, General. The referenced section includes language indicating that project personnel and subcontractors will receive a copy of the HASP and be asked to sign a form to indicate acceptance prior to the initiation of Site activities. Please indicate whether these personnel will be afforded a chance to receive a copy of the HASP prior to field mobilization and have an opportunity to review the plan and ask questions regarding its' content. [8 CCR(b)(4)(C)].

LFR Response: *A copy of the Health and Safety Plan (HSP) will be provided to all project personnel and subcontractors prior to field mobilization.*

2. Page 4, Section 5.0, Hazards of Known or Expected Chemicals of Concern. Carbon tetrachloride is identified as a contaminant of concern in the Air Monitoring Plan. However, carbon tetrachloride is not listed in the referenced section of the HASP. Please clarify for consistency.

LFR Response: *The HSP has been revised to incorporate carbon tetrachloride.*

3. Page 9, Section 6.5, Noise. An employer is obligated to quantify their employees' exposure to noise when there is a possibility of exposure to an eight-hour time-weighted average of 85 dBA. Provide personnel monitoring data from previous similar site activities or describe noise-monitoring protocols to be employed on site, including a description of the instrumentation, frequency of monitoring, and corresponding action levels. Cal-OSHA does not allow reliance upon subjective methods to demonstrate compliance with the PEL. Noise levels present on site must be taken into account when selecting the appropriate hearing protective devices (HPDs) in order to verify that the selected HPD will provide an adequate noise reduction rating. [8 CCR Group 15, Article 105 (Control of Noise Exposure)].

LFR Response: *The HSP has been revised accordingly.*

4. Page 9, Section 6.6, Excavations. Text within this section indicates that the atmosphere will be tested in excavations greater than 4 feet in depth where oxygen deficiency or toxic/flammable

gases are likely to be present before employees are permitted to enter. Testing the atmosphere with a combustible gas indicator is prudent. The IHSB suggests that the atmosphere should be concurrently tested with a more sensitive instrument (i.e., PID and/or single gas monitors) to determine if lower concentrations of VOCs and/or specific toxic gases may be present.

LFR Response: *The HSP has been revised accordingly.*

5. Page 9, Section 6.6, Excavations. Please address measures to protect ground personnel (grade checkers, geotechnical personnel, etc.) from excavation and haulage vehicles in accordance with 8 CCR 1592.

LFR Response: *This has been addressed in Section 6.2.*

6. Page 10, Section 6.7, Underground and Overhead Utilities. Please include language indicating that Underground Services Alert (USA) must be contacted a minimum of two working days prior to initiating sub-surface activities. [8 CCR 1541(b)(2)].

LFR Response: *The HSP has been revised accordingly.*

7. Page 10, Section 6.7, Underground and Overhead Utilities. Please verify that the proposed minimum safe distances described within this section are consistent with the requirements of 8 CCR 2946, Table 2 (Boom-type lifting or hoisting equipment clearances required from energized overhead high-voltage lines).

LFR Response: *The HSP has been revised accordingly.*

8. Page 11, Section 6.8, Biological Hazards. The Site description information provided in the HASP indicates that poison oak has been identified on Site. Consequently, the IHSB suggests that supplemental information be provided to Site personnel and that protective protocols specific to poison oak be addressed at the tailgate safety meetings.

LFR Response: *Additional information regarding poison oak has been incorporated into the plan.*

9. Page 18, Section 10.0, Action Levels. Please provide the rationale for how the VOC action levels were derived.

LFR Response: *The highest level of VOCs of concern based upon our reasonable worst-case soil vapor data scenario would be 49 ppm at the soil surface in the excavation area. When this data was input into the RAE systems (PID Manufacturer) program the VOCs were detectable using an 11.7 ev lamp. We have changed the plan to indicate using an 11.7 lamp as it should have been in our original submittal. The RAE systems program yielded a correction factor, based upon relative response of .52. Therefore, a 5 ppm reading increase is really a 2.6 ppm increase, and the 25ppm increase is really a 13 ppm increase. We believe*

these levels to be protective of the workers, as it is improbable that the levels would be low PEL constituents. This will be verified with additional monitoring including monitoring specifically for 1,2-DCA, vinyl chloride, and benzene. It is reasonable to assume higher levels would occur first in the soil disturbance area. Personnel in the soil disturbance area will be in Level C respiratory protection.

10. Page 18, Section 10.0, Action Levels. The IHSB recommends that real-time particulate monitoring action levels for Site workers be incorporated into the referenced section of the HASP. Assuming that no other Site contaminant would drive a lower particulate action level, the IHSB suggests that the stop-work or level-C upgrade action level for workers be set to one-half of the Cal-OSHA PEL for Particulates Not Otherwise Regulated (PNOR), respirable fraction (2.5 mg/m^3).

    LFR Response: *This has been incorporated into the plan. It should be noted that all personnel working in areas where contaminant-affected soils are being disturbed will be wearing Level C protection including Organic Vapor/HEPA combination filter cartridges for dust and odor control.*

The following comments relate to areas not specifically addressed within the HASP.

11. The anticipated duration of field activities is not described within the HASP. [8 CCR 5192(c)(4)(C)].

    LFR Response: *The duration of activities is expected to be 12 to 14 months.*

12. Please provide background information which demonstrates ionizing radiation hazards are not a concern at this Site, or discuss monitoring protocols for radiological hazards. Employers are required to monitor the work Site for hazardous levels of ionizing radiation when the Site evaluation produces information that shows the potential for ionizing radiation or when the Site information is not sufficient to rule out these possible conditions. [8 CCR 5192(c)(6)(A)].

    LFR Response: *As part of the most recent round of sampling (termed final field evaluation sampling), testing for radioactivity was conducted. All levels encountered were found to be within background levels; therefore, no concern for elevated radioactivity exists at this Site.*

Conclusions and Recommendations:

The submitted HASP requires additional information and/or clarification. The areas where the IHSB has requested additional information and/or clarification must be corrected or clarified and resubmitted for further review.

LFR Response: *The HSP has been modified to include the above-referenced comments.*

SUBJECT: DRAFT FEASIBILITY STUDY AND REMEDIAL ACTION PLAN, NORTH SHORE AT MANDALAY BAY, OXNARD, CALIFORNIA; PCA: 12050; Site Code: 301242; WP: 11 – email from Tazita Bekele, Associate Engineer, Engineering Division

1. Page 149. The fill/cap soil will be placed into the bottom of the SCA excavations to separate the sludge and the groundwater in accordance with Title 27. The design document should specify whether they will compact the fill/cap soil or put liner to protect the GW per Title 27. It is good to provide the requirements of Title 27 and discuss specifically how the requirements will be met.

   LFR Response: *We concur with DTSC's suggestion to clearly explain how Title 27 requirements are met by the project, and have amended the FS/RAP in Sections 2.2.2 under ARARs 83-142 and in Section 6.5.1 RAO Attainment, Site Wide RAOs. The text has been modified to reflect the nature of the applicability of Title 27, and how the project uses Title 27's allowable Engineered Alternatives section to comply with this regulation. The ARARs table has been refined (ARARs 57, 83-142) to explain for each prescribed engineering element, how the element is addressed by the selected remedial action. We note that the NCP, used by DTSC, and the CA Water Code, as put forward in Title 27, use different screening criteria, and the text modifications and ARARs table modifications have been amended to use language consistent with the evaluations called for in Title 27. Please see the attached changes for explanation of how the project complies with the liner prescribed by Title 27 to protect water quality.*

2. A detailed design of the biological treatment of the sludge and ex-situ SVE for VOCs impacted soil should be provided along with operation and maintenance, monitoring and closure plan. Confirmation sampling should also be included for the treated sludge and VOCs impacted soil based on the design layout of the treatment systems.

   LFR Response: *In accordance with our previous discussions and previous DTSC comments, the FS/RAP has already been modified to specify the design elements called for in this comment. Both the biological treatment, through bioventing, and ex-situ SVE, will be implemented based upon identifying soils requiring these treatment technologies (based on comparison to RAOs), as specified in the RAP through confirmation sampling that will be conducted under DTSC oversight. In the event that confirmation sampling results indicate that these technologies will be required to attain RAOs, the detailed design for bioventing and/or ex-situ SVE will be provided as described in Section 8.1.4, which will include operation, monitoring, and closure designs.*

3. Page 152 - Figure FS-8 is a process flow diagram and not process & instrumentation diagram which should be included in the design package as well.

   LFR Response: *The text has been revised to reflect that Figure FS-8 is a process flow diagram. An instrumentation diagram will be included in the design package, as necessary.*

If you have any questions regarding the contents of this letter, please contact any of the undersigned at 714-444-0111.

Sincerely,

Stephanie M. Chute
Senior Toxicologist

Charles E. Robinson, P.E.
Vice-President